Workshop Manual

Polo 1995 ➤

Electrical system self-diagnosis

Edition 06.2004

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List of Workshop Manual Repair Groups

Repair Group

01 - Self-diagnosis

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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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01 – Self-diagnosis

1 Vehicle diagnosis, testing and information systems

WARNING

- *During testing or measuring operations using a vehicle diagnosis information system, there is a risk of serious or even fatal injury!*
- *If the vehicle diagnosis information system is lodged in the activity area of an airbag during a testing or measuring operation, a triggered airbag can result in serious or even fatal injury!*
- *During testing and measuring operations, work with a second person who can operate the vehicle diagnosis information system from one of the back seats.*

Note

- *All the operations described, e.g. adaption, coding etc. can be performed using the vehicle diagnosis, testing and information system -VAS 5051A- , the vehicle diagnosis, testing and information system -VAS 5051B- or the vehicle diagnosis and service information system -VAS 5052- .*
- *Additional information:*

⇒ Self-study programme No. 202 ; Vehicle Diagnosis, Testing and Information System VAS 5051

⇒ Self-study programme No. 256 ; VAS 5052

⇒ Self-study programme No. 294 ; Online connection of VAS 5051

⇒ Self-study programme No. 295 ; Diagnosis with VAS 5051, VAS 5052 or VAS 5053

– Connecting vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 2 .

Note

All other and the following vehicle diagnosis, testing and information systems or vehicle diagnosis and service information systems are connected accordingly as described in the chapter "Connecting vehicle diagnosis, testing and information system VAS 5051A".

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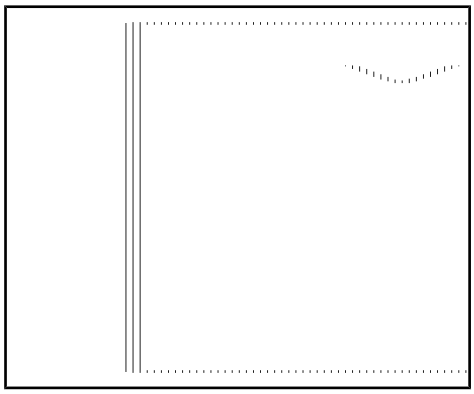
1.1 Connecting vehicle diagnosis, testing and information system -VAS 5051A-

Note

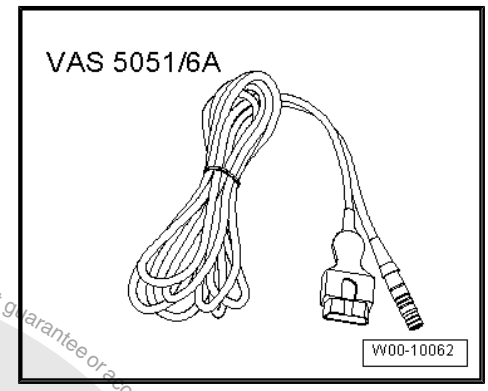
Observe the latest operating instructions for vehicle diagnosis, testing and information system -VAS 5051A- , which are displayed after selecting the "Administration" and "Operating Manual " keys.

Special tools and workshop equipment required

- Vehicle diagnosis, testing and information system -VAS 5051A-



- Diagnosis cable -VAS 5051/6A- (5 m)



- Diagnosis cable -VAS 5051/5A- (3 m)

Note

Only these cables are to be used for diagnosis, as they are the only ones fitted with CAN wiring and therefore allowing CAN diagnosis and/or CAN communication.

Connecting vehicle diagnosis, testing and information system - VAS 5051A- :

– Apply handbrake.

– Vehicles with an automatic gearbox, move selector lever to position "P" or "N".

– Vehicles with manual gearbox, move gearstick to neutral position.

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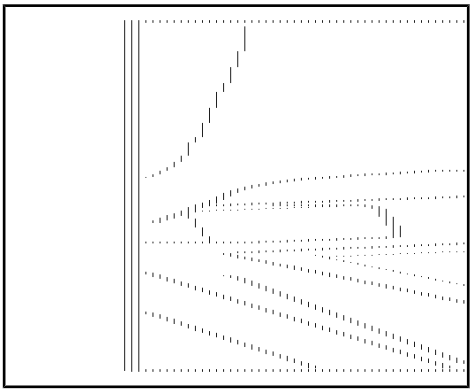
Vehicles ▸ 08.97:

– Open the compartment on the driver side and unhook it.

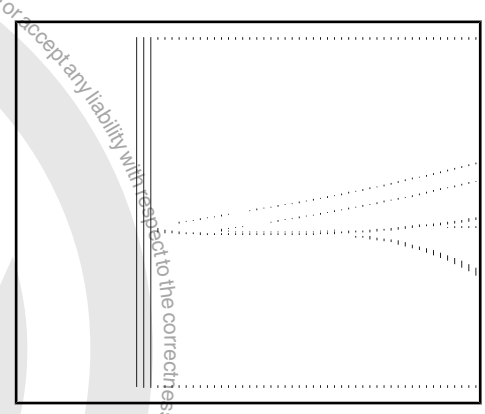
– With ignition switched off, connect vehicle diagnosis, testing and information system -VAS 5051A- using diagnosis lead -VAS 5051/6A- to diagnostic interface -arrow- in vehicle.



Vehicles 09.97 ▸ 09.99:

– Remove cover from fuse holder.

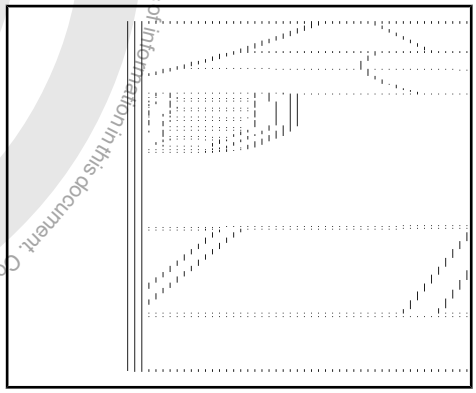
– With ignition switched off, connect vehicle diagnosis, testing and information system -VAS 5051A- using diagnosis lead -VAS 5051/6A- to diagnostic interface -arrow- in vehicle.



Vehicles 10.99 ▸

– Remove ashtray.

– With ignition switched off, connect vehicle diagnosis, testing and information system -VAS 5051A- using diagnosis lead -VAS 5051/6A- to diagnostic interface -arrow- in vehicle.



Continuation for all vehicles:

– Switch on ignition.

– Switch off all electrical consumers.

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2 Immobilizer self-diagnosis

Note

- *In Germany the “online request with GeKo-VW” replaces the request of the 7 character PIN as of 01.07.2004.*
- *In other countries the “online request” replaces the request of the 7 character PIN as of 01.10.2004.*
- *Immobilizer self-diagnosis is now only possible with vehicle diagnosis, testing and information system -VAS 5051 A- or the vehicle diagnosis and service information system -VAS 5052- .*
- *Not all self-diagnosis functions are possible due to the change-over to “online request with GeKo-VW”.*
- *The functions which are no longer possible are replaced by the programs in “guided functions”* ⇒ page 6.

General description:

Up to 08.97: a first generation immobilizer is installed in the Polo.

Communications between the immobilizer control unit and the engine control unit take place on the W-wire.

From 09.97 to 05.00: a second generation immobilizer is installed in the Polo.

Communications between the immobilizer control unit and the engine control unit take place on the W-wire.

From 10.99: a third generation immobilizer is installed in the Polo.

Depending on engine fitted there are two different versions installed.

On one version the immobilizer control unit and engine control unit communicate with one another via the data bus, on the other versions this communication is via the W-wire.

The corresponding communication method should be determined beforehand using the display group 001 ⇒ page 15 via the Read data block function ⇒ page 11 .

Communications are implemented via the W-wire if the first display zone contains the Baud rate in the form of a number.

On the other hand the text “data bus” means communication via the data bus.

The immobilizer electronics consist of:

- An immobilizer control unit.
- An adapted (matched) engine control unit.
- A reader coil on ignition lock.
- And adapted (matched) ignition keys with electronic components (transponder and response reader memory).

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2.1 Performing immobilizer self-diagnosis

Note

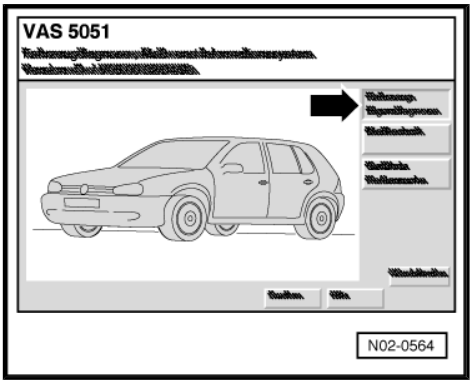
- *Not all self-diagnosis functions are possible due to the change-over to "online request with GeKo-VW".*
- *The functions which are no longer possible are replaced by the programs in "guided functions"* ⇒ page 6 .

2.1.1 Initiating immobilizer self-diagnosis

– Connect vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 1 or vehicle diagnosis and service information system -VAS 5052- ⇒ page 1 .

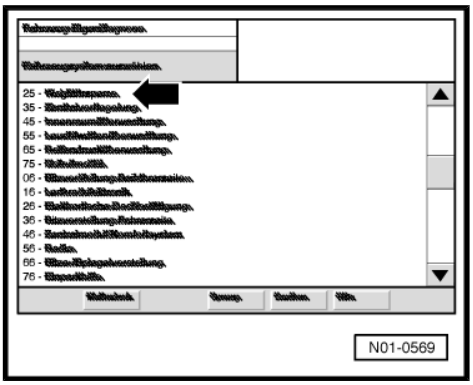
Indicated on display:

– Press key on screen for "vehicle self-diagnosis" -arrow-.



Indicated on display:

– Press "25 - Immobilizer" on screen -arrow-.



Indicated on display:

The control unit identification and the code are displayed.

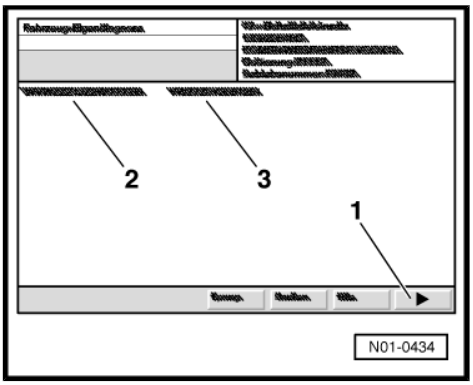
- Selected address word.
- Control unit part no.
- System designation (IMMO), version number.
- Code number[1].
- Dealership number[2].

1) Depending on engine, gearbox and optional equipment.

2) Will be automatically stored in the control unit when entering the system.

The display also shows the 17-digit chassis number (WVW....) -2- and the 14-digit identification number (VW....) -3-.

– Press the arrow key -1- in the display.



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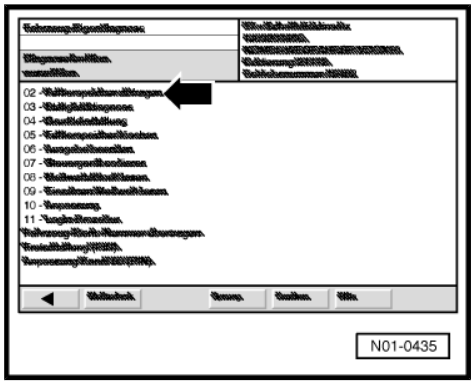
2.1.2 Overview of functions available in self-diagnosis

– Initiating immobilizer self-diagnosis ⇒ page 5 .

Indicated on display:



Functions	Page
02 - Reading fault memory	⇒ page 6
05 - Erasing fault memory	⇒ page 7
06 - Ending output	⇒ page 8
07 - Coding control unit	⇒ page 16
08 - Reading data block	⇒ page 11

Note

The following functions are no longer possible in self-diagnosis but are replaced by the programs in "Guided functions".

- 10 - Adaption
- Transfer vehicle identification number
- Enable (PIN)
- Adaptation of channel 50 (PIN)

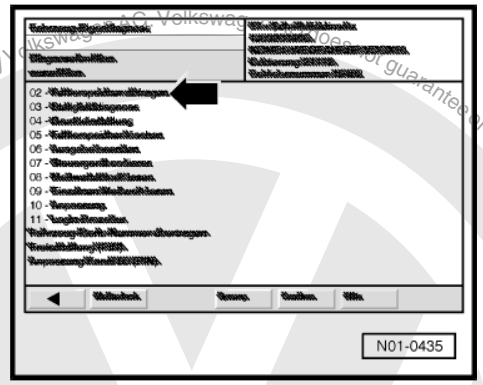
"Guided functions" ⇒ page 19 .

2.1.3 Reading fault memory

– Initiating immobilizer self-diagnosis ⇒ page 5 .

Indicated on display:

– Press "02 - Read fault memory" on screen -arrow-.



Note

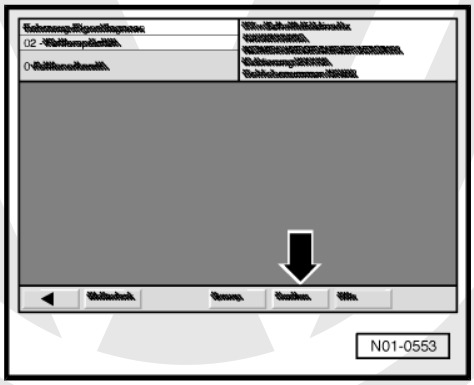
The displayed fault information is only updated when the self-diagnosis is started or the function 05 "Erase fault memory" is selected. The information is not continuously updated.

Any stored faults are shown on the display:

– Press "Print" key on display -arrow- and then on "Screen" in subsequent print menu.

The printer of vehicle diagnosis, testing and information system - VAS 5051 A- then prints out either the faults displayed on the screen or "0 fault recognised". Repair measures are required if any faults are stored. The fault print-out is needed for the repairs.

– End output ⇒ page 8 .



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2.1.4 Erasing fault memory

Note

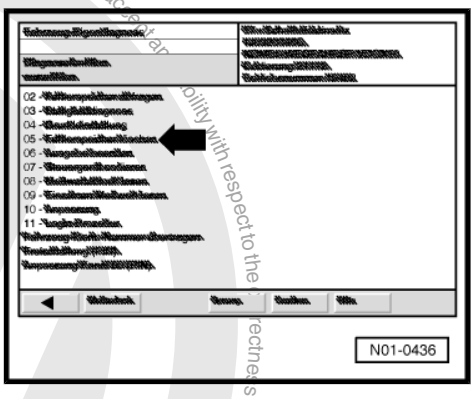
After erasing the fault memory its contents will be automatically displayed. If the fault memory cannot be erased, read the fault memory again and repair any faults found.

Prerequisites:

- Fault memory read ⇒ page 6 .
- All faults repaired.

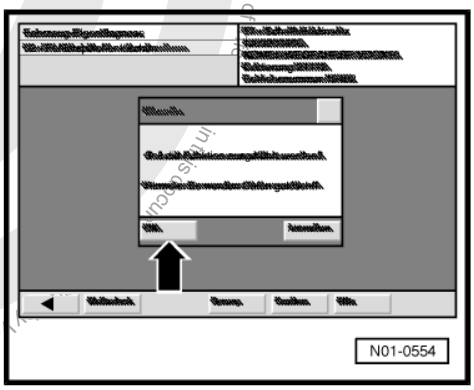
After subsequent reading of fault memory, indicated on display:

– Press “05 - Erase fault memory” on screen -arrow-.



Indicated on display:

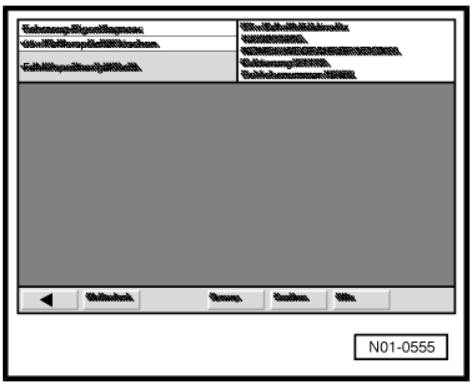
– Confirm the message -arrow-.



Indicated on display:

The fault memory is now erased.

– End output ⇒ page 8 .



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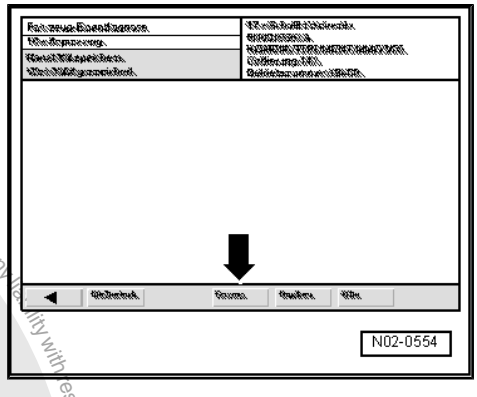
2.1.5 Ending output

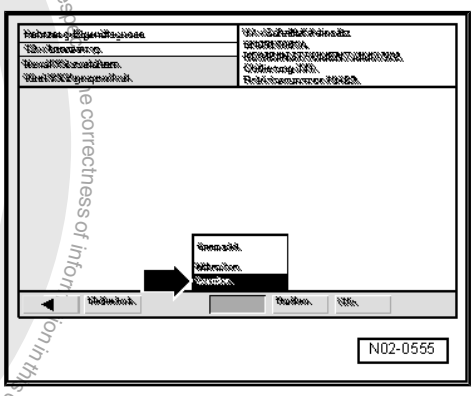
Indicated on display:

– Press “GoTo” on the display -arrow-.



Indicated on display:

– Press “End” on the display -arrow-.
– Press “End” key in “exit menu”.
– Switch ignition off and disconnect diagnosis connector.



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2.2 Fault table

Note

- *In addition after repairs, always read fault memory of engine control unit to erase content "Engine control unit blocked" of fault memory.*
- *Other stored faults must be evaluated and rectified if necessary*
- *All 'static' and 'sporadic' faults are stored in the fault memory. A fault is recognized as 'static' if it is present for a minimum of 2 seconds. If a fault is then no longer present it is stored as a 'sporadic' fault.*
- *After switching on the ignition, any faults stored are initially set to 'sporadic' and are then changed to 'static' if they are still present after the check has been completed.*
- *If a 'sporadic' fault is no longer present during the next 50 driving cycles (ignition on for a minimum of 2 seconds) it is erased.*
- *The list below contains all possible faults which can be recognised by the immobilizer control unit -J362- and indicated on the display of the vehicle diagnosis, testing and information system -VAS 5051 A- or vehicle diagnosis and service information system -VAS 5052- , listed according to 5-digit fault code.*
- *Before renewing a component shown as faulty, check wiring and connections to the component as well as earth connections referring to current flow diagram.*
- *Correct seating of connections and locking devices on relay plate must also be checked.*
- *After repairs, always read the fault memory again with the vehicle diagnosis, testing and information system -VAS 5051 A- or vehicle diagnosis and service information system -VAS 5052- and erase, then subsequently read the fault memory.*

Indicated on display	Possible fault cause	Fault elimination
No fault recognized!	The self-diagnosis is finished If "No fault recognized" appears after completing repairs.	
00546 Data wiring defective. Implausible signal.	No signal or implausible signal on the "W" wiring between the immobilizer control unit and the engine control unit or the fuel shut-off valve control unit.	– Check wiring for open circuit or short circuit.
	The baud rate (data transmission rate) of the immobilizer control unit is incorrect.	– Code the control unit and input the correct baud rate ⇒ page 16 .
	Incorrect operation: The ignition was immediately switched back on after stopping the engine (i.e. during the shutdown phase).	– Switch ignition off, wait at least 10 seconds, switch ignition back on and then select function 02 "Read fault memory" again ⇒ page 6 .
	Immobilizer control unit -J362- defective.	– Erase fault memory ⇒ page 7 and read memory again ⇒ page 6 . – Replace immobilizer control unit -J362- if necessary.
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Indicated on display	Possible fault cause	Fault elimination
Immobilizer reading coil -D2- .	3-pin connector not connected at control unit or reader coil and wiring defective. Immobilizer control unit -J362- defective.	– Check connector, reader coil and wiring (visual check), if necessary renew reader coil. – Erase fault memory ⇒ page 7 and read memory again ⇒ page 6 . – Replace immobilizer control unit -J362- if necessary.
01176 Key Signal too low.	Reader coil or wire defective (contact resistance/loose contact). Electronic component in ignition key (transponder) missing or does not work. Wrong transponder type in ignition key.	– Check reader coil with wiring and connector (visual check), if necessary renew reader coil. – Renew ignition key, perform new adaptation for all ignition keys and check operation ⇒ page 20 .
Not authorized.	Key fits mechanically, but adaptation routine has not been performed.	– Perform new adaptation for all ignition keys and check operation ⇒ page 20 .
01177 Engine control unit. Not authorized.	Adaptation routine not performed for engine control unit or fuel shut-off valve control unit. W-wire between the components is OK.	– Perform adaptation routine for engine control unit or fuel shut-off valve control unit ⇒ page 21 .
01179 Key programming incorrect.	Ignition key adaptation is faulty. Electronic component in ignition key (transponder) missing or does not work. Wrong transponder type in ignition key.	– Re-match all ignition keys and check operation ⇒ page 20 . – Renew ignition key, perform new adaptation for all ignition keys and check operation ⇒ page 20 .
01181 Initialisation: only 2 keys learned.	During initial adaptation the ignition was switched on a third time with one of the ignition keys for longer than 1 second . Only two ignition keys can be adapted during initial adaptation.	– Erase fault memory ⇒ page 7 and read memory again ⇒ page 6 .
01202 Diagnosis lead. Short circuit.	Short circuit between wires of connector, 6-pin, chambers 2 and 3 (“W” and “K”) on immobilizer control unit -J362- . Short circuit between wires of connector, 8-pin, chambers 7 and 8 (“W” and “K”) on immobilizer control unit -J362- . Short circuit between wires of connector, 10-pin, chambers 7 and 8 (“W” and “K”) on immobilizer control unit -J362- . Immobilizer control unit -J362- defective.	– Check connection and, if necessary, rectify fault referring to current flow diagram. – Check connection and, if necessary, rectify fault referring to current flow diagram. – Check connection and, if necessary, rectify fault referring to current flow diagram. – Erase fault memory ⇒ page 7 and read memory again ⇒ page 6 . – Replace immobilizer control unit -J362- if necessary.
01237 Fuel shut-off valve -N109- .		

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Indicated on display	Possible fault cause	Fault elimination
Defective.	Fuel shut-off valve control unit or fuel shut-off valve defective.	– Remove fuel shut-off valve control unit and disconnect electric wiring. – Temporarily apply battery voltage (term. 30) to fuel shut-off valve (use measuring tool set -V.A.G 1594/C-): ♦ Fuel shut-off valve clicks audibly ⇒ renew fuel shut-off valve control unit. ♦ Fuel shut-off valve does not click ⇒ renew fuel shut-off valve.
01312 Powertrain data bus. Defective.	Fault in data wiring. Powertrain data bus in Bus off mode.	– Read data block ⇒ page 11 . – Check control unit coding. – Read fault memories of all control units connected to powertrain data bus and rectify any faults. – Check data bus referring to current flow diagram.
01314 Engine control unit. No communications.	Data received from engine control unit via powertrain data bus not OK.	– Read fault memory of engine control unit and rectify any faults. – Check data bus to engine control unit referring to current flow diagram.
65535 Control unit. Defective.	Short circuit between wires of connector, 6-pin, chambers 2 and 3 (“W” and “K”). Short circuit between wires of connector, 8-pin, chambers 7 and 8 (“W” and “K”). Short circuit between wires of connector, 10-pin, chambers 7 and 8 (“W” and “K”). The immobilizer control unit -J362- does not recognise the correct Baud rate (data transfer speed). Immobilizer control unit -J362- cannot communicate via data bus. Immobilizer control unit -J362- defective.	– Rectify fault referring to current flow diagram. – Rectify fault referring to current flow diagram. – Rectify fault referring to current flow diagram. – Replace immobilizer control unit -J362- . – Replace immobilizer control unit -J362- . – Replace immobilizer control unit -J362- .

2.3 Reading data block

– Initiating immobilizer self-diagnosis ⇒ page 5 .

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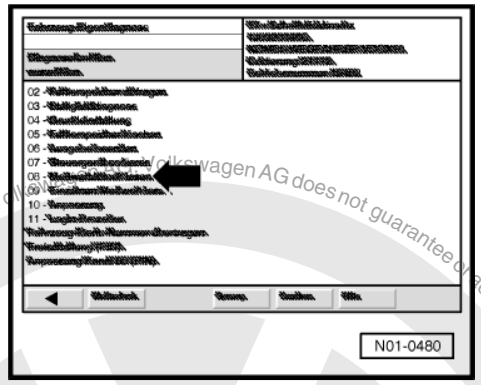
Indicated on display:

– Press “08 - Read data block” on the display -arrow-.

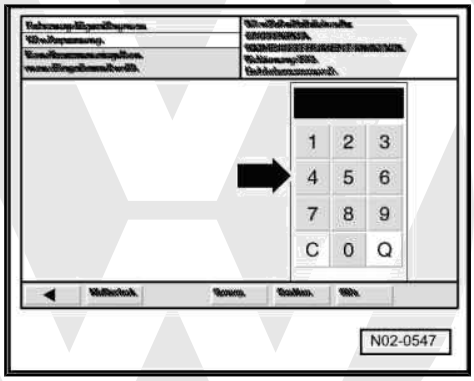


Indicated on display:

– Press number of data block to be read on number block on display -arrow- and confirm entry with Q key.

Example of data block contents

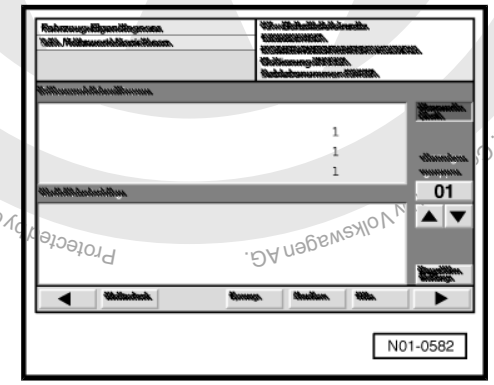
– On the number pad on the display, click on 0, 0 and 1 and then click on the Q key to confirm the entry.



Indicated on display:

If there is a “0” in the first display zone then the reader coil is faulty.

If there is a “1” in the first display zone then the reader coil is OK.



2.3.1 Overview of selectable display groups; significance of display zones and display possibilities ▸ 87.97

Overview of selectable display groups:

Display group	Display zone in display
001	1 = reader coil 2 = key status 3 = key authorised

Note

- *The data block always indicates the active status of the immobilizer at the point just after the ignition was switched on.*
- *If an electrical fault occurs which changes this condition after the ignition is switched on, it will not be displayed until the ignition is switched on again and the function “Read data block” is called up.*

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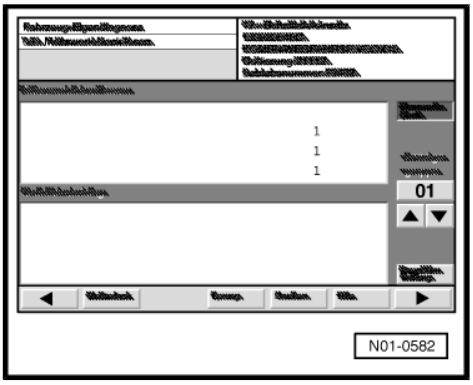
Significance of display zones and display possibilities for display group 001:

Display example	Display zone	Possible display
1	1 = Reader coil	0 = faulty 1 = OK
1	2 = Key status	0 = defective 1 = OK
1	3 = Authorised key	0 = no 1 = yes



2.3.2 Overview of selectable display groups; significance of display zones and display possibilities 09.97 ▸ 09.99

Overview of selectable display groups:

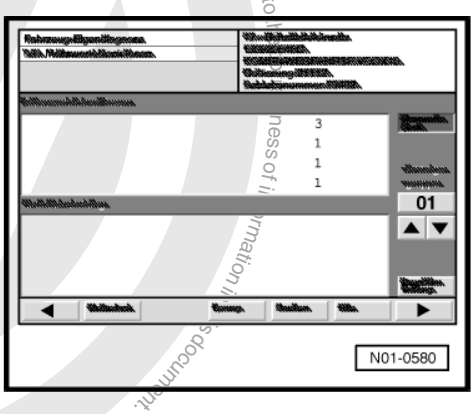
Display group	Display zone in display
001	1 = No. of keys learned 2 = Reader coil 3 = Key status 4 = Key authorised
002	1 = Key learning time in seconds 2 = Target no. of keys 3 = Actual no. of keys 4 = Status of key adaptation

Note

- *The data block always indicates the active status of the immobilizer at the point just after the ignition was switched on.*
- *If an electrical fault occurs which changes this condition after the ignition is switched on, it will not be displayed until the ignition is switched on again and the function "Read data block" is called up.*

Significance of display zones and display possibilities for display group 001:

Display example	Display zone	Possible display
3	1 = Number of learned keys	0 = minimum 8 = maximum
1	2 = Reader coil	0 = faulty 1 = OK
1	3 = Key status	0 = defective 1 = OK
1	4 = Authorised key	0 = no 1 = yes



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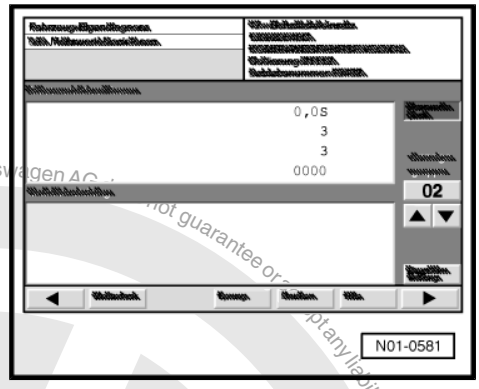
Significance of display zones and display possibilities for display group 002:



Display example	Display zone	Possible display
0.0 s	1 = Key learning time	Learning time in seconds
3	2 = Set number of keys	0 = minimum 8 = maximum
3	3 = Actual number of keys	0 = minimum 8 = maximum
0000	4 = Status of key adaptation ♦ Fault status ♦ Adaption ♦ Current key ♦ Current adaptation	0XXX = no fault 1XXX = fault X0XX = finished X1XX = running XX0X = OK XX1X = not OK XXX0 = OK XXX1 = not OK

2.3.3 Overview of selectable display groups; significance of display zones and display possibilities 10.99 ▸

Overview of selectable display groups:

Display group	Display zone in display
001	1 = Data bus transfer rate[3)] 2 = Reader coil 3 = Key condition 4 = Authorized key
002	1 = Start procedure permitted 2 = Engine control unit responding 3 = Key status OK. 4 = Number of learned keys
003	1 = Change code authorized 2 = Key status (transponder) 3 = Authorised fixed code 4 = Immobilizer status
004	1 = Login disable (tester) 2 = Login disable (CAN) 3 = Inoperative 4 = Scan protection disable
005	1 = Key learning time in seconds 2 = Target no. of keys 3 = Actual no. of keys 4 = Status of key adaptation

3) Depending on the communication type, this field either contains the “data bus” or the Baud rate in the form of a “number”.

Note

- *The data block always indicates the active status of the immobilizer at the point just after the ignition was switched on.*
- *If an electrical fault occurs which changes this condition after the ignition is switched on, it will not be displayed until the ignition is switched on again and the function “Read data block” is called up.*

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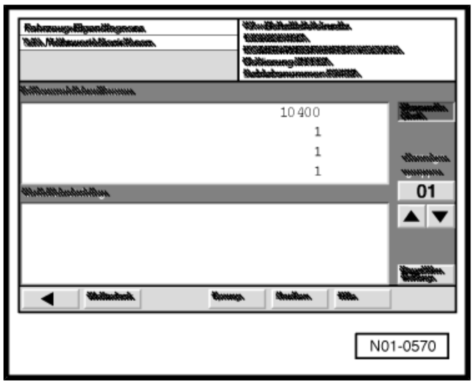
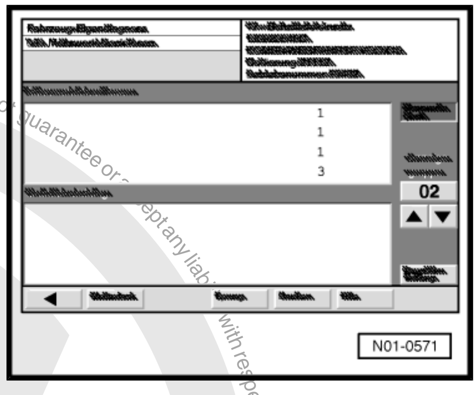
Significance of display zones and display possibilities for display group 001:



Display example	Display zone	Possible display
Data bus[4] 10400[4]	1 = Data bus (communication type) 1 = Baud rate (communication type: W-wire)	Data transfer type Speed of data transfer
1	2 = Reader coil	0 = faulty 1 = OK
1	3 = Key status	0 = defective 1 = OK
1	4 = Authorised key	0 = no 1 = yes

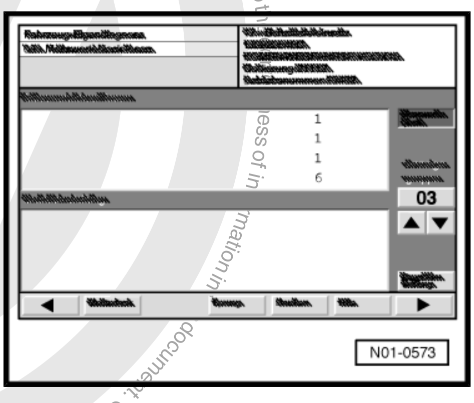
4) Depending on the communication type, this field either contains the “data bus” or the Baud rate in the form of a number (W-wire).

Significance of display zones and display possibilities for display group 002:



Display example	Display zone	Possible display
1	1 = Start procedure permitted	0 = no 1 = yes
1	2 = Engine control unit responding	0 = no 1 = yes
1	3 = Key status OK	0 = no 1 = yes
3	4 = Number of learned keys	0 = minimum 8 = maximum

Significance of display zones and display possibilities for display group 003:



Display example	Display zone	Possible display
1	1 = Change code authorized	0 = no 1 = yes
1	2 = Key status (transponder)	0 = not blocked 1 = blocked
1	3 = Fixed code authorised	0 = no 1 = yes
6	4 = Immobilizer status	4 = Service department new 5 = Service department locked 6 = Immobilizer adapted 7 = Key learning active

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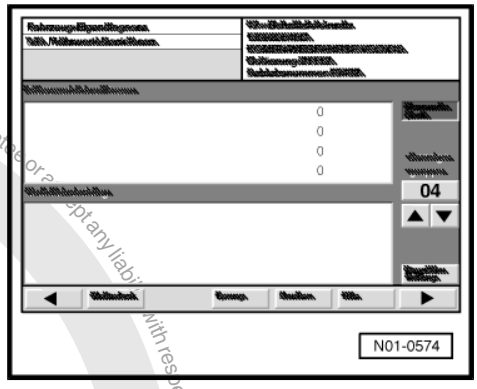
Significance of display zones and display possibilities for display group 004:

Display example	Display zone	Possible display
0	1 = Login disable (tester)	0...255
0	2 = Login disable (CAN)	0...255
0	3 = inoperative	0
0	4 = Scan protection disable	0...10

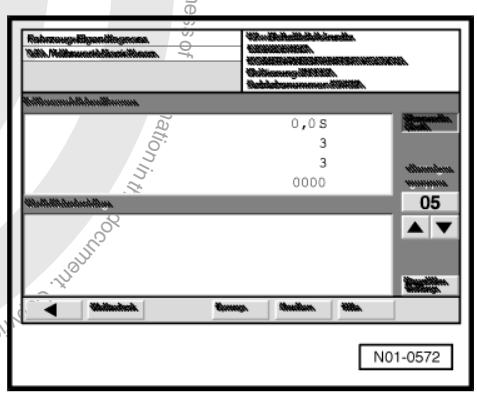


Note

The block is activated after 20 attempts at starting the vehicle with an unauthorised key.

Significance of display zones and display possibilities for display group 005:

Display example	Display zone	Possible display
0.0 s	1 = Key learning time	Learning time in seconds
3	2 = Set number of keys	0 = minimum 8 = maximum
3	3 = Actual number of keys	0 = minimum 8 = maximum
0000	4 = Status of key adaptation ◆ Fault status ◆ Adaption ◆ Current key ◆ Current adaptation	XXX0 = no fault XXX1 = fault XX0X = finished XX1X = running X0XX = OK. X1XX = not OK 0XXX = finished 1XXX = running



2.4 Coding immobilizer control unit -J362-

– Coding immobilizer control unit -J362- , vehicle ‣ 08.97 ⇒ page 16 .

– Coding immobilizer control unit -J362- (W-wire), vehicle 09.97 ‣ ⇒ page 17 .

– Coding immobilizer control unit -J362- (data bus), vehicle 10.99 ‣ ⇒ page 18 .

2.4.1 Coding immobilizer control unit -J362- , vehicle ‣ 08.97

– Initiating immobilizer self-diagnosis ⇒ page 5 .

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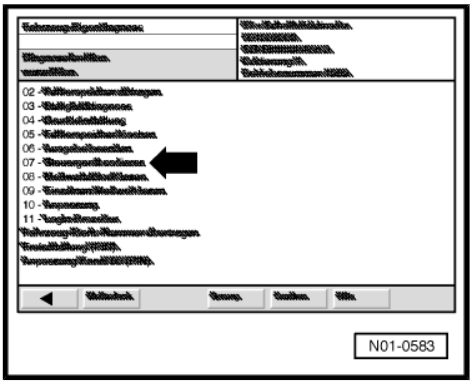
Indicated on display:

– Press “07 - Code control unit” on the display -arrow-.



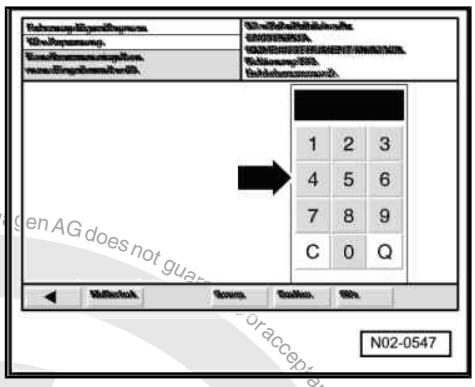
Indicated on display:

Following codings are possible:

- 09600 - Petrol engine, TDI and SDI engine
- 02400 - Diesel engine, except TDI and SDI engine

– Press the corresponding keys on the number pad on the display -arrow-.

– Confirm the entry by pressing the Q key on the number pad on the display.



2.4.2 Coding immobilizer control unit -J362- (W-wire), vehicle 09.97 ▸

Note

- *Vehicles from 01.99 ▸ two different versions are installed depending on the type engine. On one version the immobilizer control unit and engine control unit communicate with one another via the data bus, on the other versions this communication is via the W-wire.*
- *The corresponding communication method should be determined beforehand using the display group 001 ⇒ page 15 via the “Read data block” function ⇒ page 11 .*
- *Procedure for control unit communications via data bus ⇒ page 18 .*

The control units for 2nd and 3rd generation immobilizers (communication via W-wire) are equipped with an automatic recognition for the Baud rate. This means that it is not necessary to code the control units.

The correct data transfer speed between engine control unit or fuel shut-off control unit and immobilizer control unit is automatically stored in the immobilizer control unit after recognition.

Note

- *If the immobilizer control unit cannot detect the correct Baud rate, then the coding is set to the value “00000”.*
- *The fault “Control unit defective” is stored in the fault memory ⇒ page 11 .*

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2.4.3 Coding immobilizer control unit -J362- (data bus), vehicle 10.99 ▸

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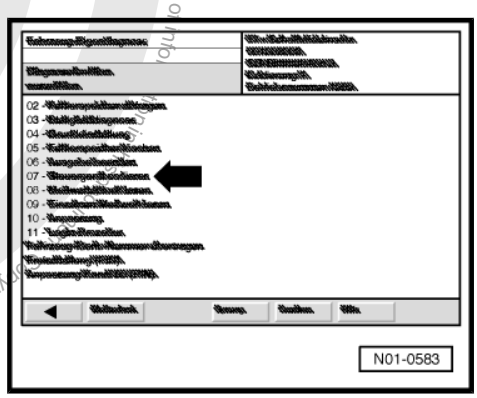
Note

- *Vehicles from 01.99 ▸ two different versions are installed depending on the type engine. On one version the immobilizer control unit and engine control unit communicate with one another via the data bus, on the other versions this communication is via the W-wire.*
- *The corresponding communication method should be determined beforehand using the display group 001 ⇒ page 15 via the "Read data block" function ⇒ page 11 .*
- *Procedure for control unit communications via the W-wire ⇒ page 17 .*

– Initiating immobilizer self-diagnosis ⇒ page 5 .

Indicated on display:

– Press "07 - Code control unit" on the display -arrow-.



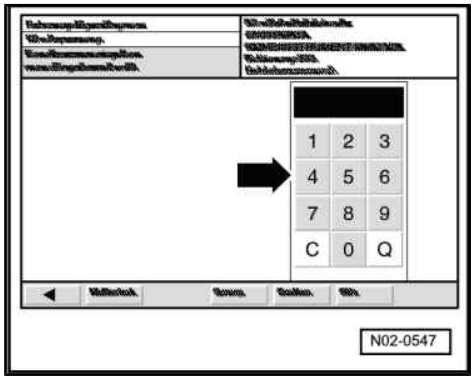
Indicated on display:

The following codings are possible:

- 00001 - for all vehicles

– On the number pad on the display -arrow-, press the keys [0], [0], [0], [0] and [1].

– Confirm entry by pressing "Q" key on number block on display -arrow-.



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3 Guided functions for immobilizer

Note

- *In Germany the "online request with GeKo-VW" replaces the request of the 7 character PIN as of 01.07.2004.*
- *In other countries the "online request" replaces the request of the 7 character PIN as of 01.10.2004.*
- *Immobilizer "adaption" is now only possible with vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- in operating mode "Guided functions".*
- *Observe additional information and prerequisites for "online request with GeKo-VW"* *⇒ page 19* .

General description:

Up to 08.97: a first generation immobilizer is installed in the Polo.

Communications between the immobilizer control unit and the engine control unit take place on the W-wire.

From 09.97 to 05.00: a second generation immobilizer is installed in the Polo.

Communications between the immobilizer control unit and the engine control unit take place on the W-wire.

From 10.99: a third generation immobilizer is installed in the Polo.

Depending on engine fitted there are two different versions installed.

On one version the immobilizer control unit and engine control unit communicate with one another via the data bus, on the other versions this communication is via the W-wire.

The immobilizer electronics consist of:

- An immobilizer control unit.
- An adapted (matched) engine control unit.
- A reader coil on ignition lock.
- And adapted (matched) ignition keys with electronic components (transponder and response reader memory).

3.1 Observe additional information and perquisites for "online request with GeKo-VW"

Prerequisites:

- At least one vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- must be "online".
- The user ID and password for GeKo-VW must be entered in the user profile of the dealership system.

Additional information:

The change affects all vehicles with an immobilizer, even older vehicles.

"GeKo-VW" means Secret and Component Protection for Volkswagen Vehicles.

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With the introduction of “GeKo-VW” the “PIN” for the immobilizer can only be requested by “online request”.

“GeKo-VW” replaces the request for the “7-digit PIN”.

With the authorisation of “GeKo-VW” the radio code of a VW radio can be requested via ELSA/FISH.

Note

- *All other information is located in ServiceNet under System/ GeKo-VW - Germany*
- *An “online system test” should be undertaken to check the online connection, the user authorisation and a correct line connection before adapting the immobilizer* ⇒ page 20 .

3.2 Online system test

– Connect either vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 1 or vehicle diagnosis and service information system -VAS 5052- ⇒ page 1 .

– Select operating mode “Guided functions” in vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- .

– Select following menu points one after the other according to Volkswagen brand CD:

- Car rest vehicles
- All model years
- All versions
- All engine codes
- Press “GoTo” key.
- “Immobilizer I and II” or “Immobilizer III address word 25”
- “Immobilizer I and II functions” or “Immobilizer III functions”
- Online system test

The “online system test” is now a part of the test plan and can be initiated by pressing the “GoTo” key.

3.3 Adaptation of ignition keys

Note

Order a new genuine key via lock number ⇒ Parts catalogue (ETKA) if a key is lost.

– Connect either vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 1 or vehicle diagnosis and service information system -VAS 5052- ⇒ page 1 .

– Select operating mode “Guided functions” in vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- .

– Select following menu points one after the other according to Volkswagen brand CD:

- Car rest vehicles
- All model years

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- All versions
- All engine codes
- Press “GoTo” key.
- “Immobilizer I and II” or “Immobilizer III address word 25”
- “Immobilizer I and II functions” or “Immobilizer III functions”
- Adaptation of ignition keys

The “adaption of ignition keys” is now a part of the test plan and can be initiated by pressing the “GoTo” key.

3.4 Adaption (matching) after changing engine control unit

– Connect either vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 1 or vehicle diagnosis and service information system -VAS 5052- ⇒ page 1 .

– Select operating mode “Guided functions” in vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- .

– Select following menu points one after the other according to Volkswagen brand CD:

- Car rest vehicles
- All model years
- All versions
- All engine codes
- Press “GoTo” key.
- “Immobilizer I and II” or “Immobilizer III address word 25”
- “Immobilizer I and II functions” or “Immobilizer III functions”
- Adaption (matching) after changing engine control unit

The “adaption after changing engine control unit” is now a part of the test plan and can be initiated by pressing the “GoTo” key.

3.5 Adapting immobilizer

– Connect either vehicle diagnosis, testing and information system -VAS 5051A- ⇒ page 1 or vehicle diagnosis and service information system -VAS 5052- ⇒ page 1 .

– Select operating mode “Guided functions” in vehicle diagnosis, testing and information system -VAS 5051A- or vehicle diagnosis and service information system -VAS 5052- .

– Select following menu points one after the other according to Volkswagen brand CD:

- Car rest vehicles
- All model years
- All versions
- All engine codes
- Press “GoTo” key.
- “Immobilizer I and II” or “Immobilizer III address word 25”
- “Immobilizer I and II functions” or “Immobilizer III functions”
- Adapting immobilizer

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The “immobilizer adaption” is now a part of the test plan and can be initiated by pressing the “GoTo” key.

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4 Dash panel self-diagnosis for vehicles 1998 ▸ 09.99

General description:

Note

- *The dash panel insert must not be dismantled.*
- *Only the main beam warning lamp has a bulb which can be individually replaced. The dash panel insert must be exchanged for all other faults.*
- *If required the dash panel insert is to be exchanged using normal exchange part procedures. Complete damage report form and return together with dash panel insert. Use original packaging only when returning items.*
- *The odometer reading and the service interval display can be adapted to the new dash panel insert* ⇒ page 33 .

The dash panel insert is controlled via a microprocessor which is equipped with an extensive self-diagnosis functionality.

If faults occur in the sensors and components being monitored, they will be stored in the fault memory together with an indication of the type of fault.

The self-diagnosis must be initiated at the start of fault finding and the stored information read. The fault information displayed is used in conjunction with a fault table which has information on the possible fault causes for pin-pointed repair measures ⇒ page 28 .

4.1 Performing self-diagnosis of dash panel insert

4.1.1 Initiating self-diagnosis of dash panel insert

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" ⇒ page 1 .

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for "Rapid data transfer" mode.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word  XX
```

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– Press buttons 1 and 7. (“17” is used to enter the address word “Dash panel insert”).

Indicated on display:

```
Rapid data transfer                    Q
17 Dash panel insert
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Q
Tester sends address word 17
```

Indicated on display:

```
6H0919860  Combi-instrument MM0   V27 ->
Coding 00141                WSC     00000
```

– Press → key.

If the following display appears:

```
Control unit not responding!         HELP
```

– Press the HELP key to print out a list of possible fault causes.

– After rectifying faults enter address word 17 for dash panel insert again and confirm with Q.

Indicated on display:

```
6H0919860  Combi-instrument MMO   V27 ->
Coding 00141                WSC     00000
```

– Press → key.

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– After the HELP key is pressed, a list of the possible functions is printed out ⇒ page 24 .

4.1.2 Overview of available functions

Functions	Page
01 - Reading control unit version	⇒ page 25
02 - Reading fault memory	⇒ page 25
03 - Final control diagnosis	⇒ page 28
05 - Erasing fault memory	⇒ page 26
06 - Ending output	⇒ page 27
07 - Coding control unit	⇒ page 30
08 - Reading data block	⇒ page 32
10 - Adaption	⇒ page 33

Note

- *Do not select further functions which can be printed out after pressing the HELP key.*
- *After the function is finished the fault reader -V.A.G 1551- returns to the following starting position:*

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

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4.1.3 Reading control unit version

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" ⇒ page 1 .

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for "Rapid data transfer" mode.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word   XX
```

– Press buttons 1 and 7. ("17" is used to enter the address word "Dash panel insert").

Indicated on display:

```
Rapid data transfer                    Q
17 Dash panel insert
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Q
Tester sends address word 17
```

Indicated on display:

```
6H0919860  Combi-instrument MM0   V27 ->
Coding 00141               WSC     00000
```

- Top line: part number of control unit, system designation (combi-instrument), manufactures code version number
- Bottom line: Code number [5], dealership number [6]

5) Depending on engine, gearbox, optional equipment and country version

6) Will be automatically stored in the control unit when entering the system.

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

4.1.4 Reading fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" ⇒ page 1 .

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

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Note

The displayed fault information is only updated when the self-diagnosis is started or the function 05 "Erase fault memory" is selected. The information is not continuously updated.

– Switch on the printer with the PRINT key (indicator lamp in key lights up).

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 2. (02 selects the function "Read fault memory").

Indicated on display:

```
Rapid data transfer                       Q
02 - Read fault memory
```

– Confirm entry with Q key.

The number of stored faults appears in the display.

```
X faults recognized!
```

The stored faults are displayed and printed out one after another.

– Check print out against fault table and rectify all faults as necessary ⇒ page 28 .

Note

If "No fault recognised" is displayed the programme will return to the start point after pressing → key.

```
No fault recognized!                   ->
```

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If something else is displayed: ⇒ Fault reader operating instructions .

– End output (function 06) ⇒ page 27 .

4.1.5 Erasing fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Note

After erasing the fault memory its contents will be automatically displayed. If the fault memory cannot be erased, read the fault memory again and repair any faults found.

Prerequisites:

- Fault memory read ⇒ page 25 .
- All faults repaired.

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After fault memory has been successfully read:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5. (05 selects the function “Erase fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 Erase fault memory
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory is erased!
```

The fault memory is now erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

Note

If this appears in the display, the test sequence is faulty.

```
Warning!
Fault memory was not read
```

If this appears in the display, the test sequence is faulty.

```
Rapid data transfer                      ->
Fault memory was not read
```

Adhere exactly to test sequence: first read fault memory, if necessary repair faults, then erase.

4.1.6 Ending output

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6. (06 selects the function “End output”).

Indicated on display:

```
Rapid data transfer                       Q
06 End output
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Help
Enter address word  XX
```

– Switch off ignition.

– Disconnect fault reader -V.A.G 1551- .

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4.2 Fault table

Note

- *The following table lists all the faults that can be recognised by the dash panel insert control unit -J285- . The faults are listed in order according to their 5-figure code numbers.*
- *Before renewing components, check the wiring and connections to these components as well as the earth connections, referring to the current flow diagram.*
- *When repair has been carried out, the fault memory must always be read again and erased.*

Indicated on display	Possible fault cause	Fault elimination
No fault recognized!	The self-diagnosis is finished If “No fault recognized” appears after completing repairs.	
00771 Fuel gauge sender -G- .		
Short to earth.	Wiring or connectors defective.	– Check wiring and connectors referring to current flow diagram.
Open circuit/short to positive.	Fuel gauge sender -G- defective.	– Renew fuel gauge sender -G- .
01039 Coolant temperature display sender -G2- .		
Short to earth.	Wiring or connectors defective.	– Check wiring and connectors referring to current flow diagram.
	Coolant temperature display sender -G2- defective.	– Renew coolant temperature display sender -G2- .
Sender cannot be tested at present.	Coolant temperature below 0 °C.	– Run engine for at least 15 minutes then erase fault memory and read memory again. If the fault appears in the display again, coolant temperature display sender -G2- is defective. – Renew coolant temperature display sender -G2- .
01086 Speedometer sender -G22- .		
Signal too high.	Speedometer sender -G22- defective.	– Renew speedometer sender -G22- .

4.3 Final control diagnosis

The final control diagnosis is part of the electrical check. The following components can be checked via the final control diagnosis depending on equipment installed:

- Rev counter.
- Speedometer.
- Coolant temperature gauge.
- Fuel gauge.
- Displays (odometer, digital clock).

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- Coolant temperature/coolant shortage indicator warning lamp.
- Reserve fuel warning lamp -K105- .
- Oil pressure warning lamp -K3- .
- Seat belt warning lamp, if fitted.
- Dual circuit brake/handbrake system warning lamp -K7- .
- Gong.
- Oil pressure warning buzzer.

– If the self-diagnosis detects a fault, install a new dash panel insert.

Note

- *The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* *.*
- *If the engine is running or the vehicle is moving the dash panel insert final control diagnosis cannot be initiated/will be interrupted.*
- *The C key can be used to exit the test sequence at any time.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3. (03 selects the function "Final control diagnosis").

Indicated on display:

```
Rapid data transfer                       Q
03 - Final control diagnosis
```

– Confirm entry with Q key.

Indicated on display:

```
Final control diagnosis                  ->
Rev counter
```

The rev-counter needle moves forwards and backwards through the measuring range and then position itself at 3000.

– Press → key.

Indicated on display:

```
Final control diagnosis                  ->
Speedometer
```

The speedometer needle moves forwards and backwards through the measuring range and then positions itself at 100.

– Press → key.

Indicated on display:

```
Final control diagnosis                  ->
Temperature gauge
```

The coolant temperature gauge needle moves forwards and backwards through measuring range and then positions itself at 90.

– Press → key.

Indicated on display:

```
Final control diagnosis                  ->
Fuel gauge
```

The fuel gauge needle moves forwards and backwards through measuring range and then positions itself at 1/2.

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– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Segment test
```

All LCD segments in speedometer display and in rev counter are activated and become visible.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Hot lamp
```

The coolant temperature/coolant shortage indicator warning lamp lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Fuel reserve warning lamp K105
```

The fuel reserve warning lamp -K105- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Oil pressure warning lamp K3
```

The oil pressure warning lamp -K3- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Brake system warning lamp K7
```

The dual circuit brake/handbrake warning lamp -K7- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Gong
```

The gong (chime) will be activated and will sound continuously.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
Buzzer/gong H3
```

The buzzer is activated. A warning signal can be heard (buzzer and gong -H3-).

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                 ->
END
```

After “END” appears in display, the actual values are displayed again.

– Press ⇨ key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

4.4 Coding control unit

Using this function the dash panel insert can be coded as follows:

- National codes
- Number of cylinders
- Engine type

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- Optional equipment

Note

- *The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *The coding sets the various combination possibilities according to country variants, number of cylinders and engine type.*
- *The coding table shows only the various combination possibilities that apply to the VW Polo.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 7. (07 selects the function "Code control unit").

– Confirm entry with Q key.

– Indicated on display:

```
Coding control unit
Enter code number XXXXX          (0-32000)
```

– Enter code number taken from code table ⇒ page 31 .

Example:

position				Code
02				Code for the optional equipment (seat belt warning)
	1			National codes (EU)
		4		Code for No. of cylinders (4 cylinder)
			1	Code for distance impulse number (1)

– Press keys 0, 2, 1, 4 and 1 .

– Indicated on display:

```
Coding control unit                       Q
Enter code number 02141          (0-32000)
```

– Confirm entry with Q key.

Indicated on display:

```
6H0919860  Combi-instrument MMO   V27 ->
Coding 02141                WSC    00000
```

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

4.4.1 Code table

XX				Code for optional equipment
	X			National codes
		X		Code for No. of cylinders
			X	**Code for distance impulse number**
00				No optional equipment active
02				Seat belt warning active
	1			Europe (EU)
	2			USA (US)

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XX				Code for optional equipment
	X			National codes
		X		Code for No. of cylinders
			X	**Code for distance impulse number**
	3			Canada (CDN)
	4			United Kingdom (GB)
	5			Japan (JP)
	6			Saudi Arabia (SA)
	7			Australia (AUS)
		4		4-cylinder
			1	Code

4.5 Reading data block

Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *Overview of selectable display groups* ⇒ page 33 .

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys [0] and [8] (08 initiates the function "Read data value block").

Indicated on display:

```
Rapid data transfer                       Q
08 - Read data block
```

– Confirm entry with [Q] key.

Indicated on display:

```
Read data value block
Enter display group number XXX
```

– Select relevant display group number and confirm entry with [Q] key.

Example for read data block 2:

Overview of selectable display groups ⇒ page 33 .

– Press keys [0], [0] and [2].

– Indicated on display:

```
Read data block 2                         ->
  820 km          8 l            113 Ω
```

Note

- *The display always shows the actual sender and sensor values. The values on the dash panel insert are filtered and therefore they can vary!*
- *To change to another display group proceed as follows:*

Display group	Fault reader - V.A.G 1551-	Fault reader - V.A.G 1552-
Higher	Press key [3]	Press [↑] key

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Display group	Fault reader - V.A.G 1551-	Fault reader - V.A.G 1552-
Lower	Press key 1	Press ↓ key
Skip	Press C key.	Press C key.

– Press C key to exit the current display group.

Indicated on display:

```
Read data block                    Help
Enter display group number XXX
```

– Now the desired display group number can be entered or press C key again to exit the function “Read data block”.

Indicated on display (after pressing C key again).

```
Rapid data transfer                Help
Enter address word  XX
```

– End output (function 06) ⇒ page 27 .

4.5.1 Overview of selectable display groups

Display group	Display zone in display
001	1 = Speed in km/h 2 = Engine speed in rpm 3 = Oil pressure switch 2 <min 4 = Time
002	1 = Distance travelled counter in km 2 = Fuel gauge[7] in l 3 = Ω value of fuel gauge sender -G- [8]
003	1 = Coolant temperature[9] in °C
050	1 = Odometer in km 2 = Engine speed in rpm 4 = Coolant temperature in[9] in °C

7) Display zone 2: “0 l” is always displayed for open circuit or short circuit with fuel gauge sender -G- . If there is less than 2 litres in the fuel tank then “2 l” is always displayed, if there is more than 32 litres in the fuel tank then “32 l” is always displayed.

8) In display zone 3: 510 Ω is displayed for an open circuit and 0 Ω~ is displayed for a short circuit.

9) If the current coolant temperature is between approx. 75 °C and 107 °C, the dash panel insert will always show 90 °C.

Note

- *The display always shows the actual sender and sensor values. The values on the dash panel insert are filtered and therefore they can vary!*
- *Other display groups are possible but these are not required for fault finding.*

4.6 Adaption

Using the Adaptation function the following changes can be made and stored:

- Adaptation of the fuel gauge
- Resetting the service interval display (SID)
- Adaptation of the service interval display (SID)
- Adaptation of the distance recorder when renewing the dash panel insert

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The individual functions are called up using the relevant adaptation channel number (see following adaptation table).

Adaptation table:

Adaptation channel	Adaptation functions
09	Adapting distance recorder ⇒ page 34 .
10	Service interval data for oil service (Service OIL) - adaption of counter for distance recorder when renewing dash panel insert ⇒ page 36 .
	Service interval data for oil changes service (Service OIL) - resetting counter for distance recorder ⇒ page 38 .
11	Service interval data for Inspection (Service INSP) - adaption of distance recorder counter in km when renewing dash panel insert ⇒ page 36 .
	Service interval data for inspection (Service INSP) - resetting counter for distance recorder ⇒ page 38 .
12	Service interval data for Inspection (Service INSP) - adaption of time in days counter when renewing dash panel insert ⇒ page 36 .
	Service interval data for (Service INSP) - resetting time counter in days ⇒ page 38 .
30	Adapting (matching) fuel gauge ⇒ page 40 .

4.6.1 Adapting distance travelled display

Note

- *The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *The total distance travelled by the vehicle can be read off the defective dash panel insert or determined using the service schedule.*
- *The total distance travelled displayed on the new dash panel insert must not be more than 100 km before the adaptation.*
- *The total distance travelled to be transferred to the new dash panel insert must exceed 100 km.*
- *Adaptation of the total distance travelled is only possible once and then only in a positive direction.*
- *The adaptation can be interrupted with the* C *key of the fault reader -V.A.G 1551- .*
- *It is not possible to correct an incorrect entry once it has been confirmed. In this case the dash panel insert would need to be exchanged for a new one.*
- *The adaption must take place in kilometres for countries with a display in miles. Therefore convert adaption value from miles to kilometres.*

Example:

The defective dash panel insert has an odometer display of 89627 km. This kilometre reading can be transferred to the new dash panel insert as follows:

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– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0. (10 selects the function “Adaption”).

Indicated on display:

```
Rapid data transfer                       Q
10 - Adaption
```

– Confirm entry with Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 0 and 9.

– Confirm entry with Q key.

Indicated on display:

```
Channel  9      Adaption              0 ->
km - in steps of 10 km            <-1  3->
```

– Move programme on with ↵ key.

Indicated on display:

```
Channel 9        Adaption               0
Enter adaption value XXXXX
```

The last digit of the kilometre reading must be rounded up to the nearest 10 km.

A kilometre reading of 89627 produces an adaption value of: “0”, “8”, “9”, “6” and “3”

X					Hundreds of thousands: 100000 ... 900000 km
	X				Tens of thousands: 10000 ... 90000 km
		X			Thousands: 1000 ... 9000 km
			X		Hundreds: 100 ... 900 km
				X	Tens: 10 ... 90 km
					Ones: round up to next ten

– Enter adaption value using keyboard.

Indicated on display:

```
Channel  9       Adaption              0 Q
Enter adaption value                 08963
```

– Confirm entry with Q key.

Indicated on display:

```
Channel  9       Adaption           8963 ->
km - in steps of 10 km            <-1  3->
```

– Press ↵ key.

The entered kilometre reading now appears in the display of the dash panel insert. If the displayed kilometre reading is not OK, e.g. because it was entered incorrectly:

– Press C key and enter correct adaption value again.

If the displayed kilometre reading in dash panel insert is OK:

Indicated on display:

```
Channel  9       Adaption           8963 Q
Save changed value?
```

– Confirm entry with Q key.

Indicated on display:

```
Channel  9       Adaption           8963 ->
Changed value has been saved
```

– End adaption of the distance travelled with the ↵ key.

ng für

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Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

4.6.2 Adaptation of service interval data when renewing the dash panel insert

When renewing the dash panel insert, the current service interval data readings for

- Oil service (Service OIL), distance travelled in km.
- Inspection service (Service INSP), distance travelled in km.
- Inspection service (Service INSP), time in days.

Must be transferred to the vehicle's new dash panel insert.

Note

- *The data must be read out before removing the defective dash panel insert.*
- *If the data cannot be read (defective dash panel insert) the data from the servicing schedule for the vehicle and the odometer reading must be entered.*
- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys [1] and [0]. (10 selects the function "Adaption").

Indicated on display:

```
Rapid data transfer                       Q
10 - Adaption
```

– Confirm entry with [Q] key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Select adaptation channels individually according to table:

Adaptation table:

Adaptation channel	Service event
10	Service OEL (or OIL)
11	Service INSP
12	Service INSP

Note

An incorrect entry can be corrected after pressing [C] key.

– Confirm entry with [Q] key.

Indicated on new dash panel insert display after entering channel number 10:

```
Channel 10      Adaption          150 ->
Act.val.oil in 100 km            <-1 3->
```

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The selected channel and actual counter reading for the service type are displayed in the top line.

The service event specification establishes the value from which the distance recorder and the time counter for the service interval display count back ⇒ Maintenance ; Booklet 28 .

The adaption values for adaption channels 10 to 12 calculate the difference from the relevant specification and the actual vehicle operation (time, total distance travelled).

– Press ↵ key.

Indicated on display:

```
Channel 10      Adaption          150 ->
Enter adaption value XXXXX
```

Note

The adaption value must be entered as a 5-digit number (e.g. 00090 for adaption value 90 - this equates to a distance of 9000 km to the next service).

– Enter new adaptation value.

Example:

An overall covered distance of 6000 km was determined for the vehicle from the defective dash panel insert (or the servicing schedule). The customer has covered this distance within a period of 160 days.

All of the service types need to be adapted on the new dash panel insert, so this gives the following adaptation values:

Channel 10: 15,000 km - 6000 km = 9,000 km (adaptation value 90)

Channel 11: 30000 km - 6000 km = 24000 km (adaptation value 240)

Channel 12: 360 days -160 days = 200 days (adaptation value 200)

Note

The time counter for Service INSP can be adapted to max. 360 days.

Indicated on the display after entering adaptation value 90:

```
Channel 10      Adaption           90  Q
Act.val.oil in 100 km            <-1 3->
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 10      Adaption           90   Q
Save changed value?
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 10      Adaption           90   Q
Changed value has been saved
```

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– After performing the adaptation of channel 10, press keys 1 and 0 again. (10 selects the function “Adaption”).

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Indicated on display:

```
Rapid data transfer                    Q
10 - Adaption
```

– Confirm entry with key Q and then enter other channels in same manner.

– End output (function 06) ⇒ page 27 .

4.6.3 Resetting service interval display

Note

- *The service interval display must be reset (adapted) for the delivery inspection, each oil change service and each inspection service.*
- *The service interval display can be reset using the adjustment buttons for mileage and clock on the dash panel insert (⇒ Electrical system; Rep. Gr. 90 or as described in the following.*
- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0. (10 selects the function "Adaption").

Indicated on display:

```
Rapid data transfer                    Q
10 - Adaption
```

– Confirm entry with Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Select adaption channel of service type to be reset::

Adaptation table:

Type of service:	Adaption channel:	Counter contents:	Adaption value to reset:
Service OIL	10	Distance in 100s of km	00150
Service INSP	11	Distance in 100s of km	00300
Service INSP	12	Time in days	00360

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Note

- *Entering the relevant adaption values for the distance recorder is only possible in steps of 100 km, therefore this is shown on display in 100 km.*
- *The adaption value entered must contain 5-digits (e.g. 00150 for adaption value 150 this equates to a distance of 15000 km to next service).*
- *The entered values count down to 0 km.*
- *The time counter for Service INSP can be adapted to max. 360 days.*
- *It is only possible to make direct entries using the keyboard of the fault reader unit!*
- *If an incorrect value is entered the "adaption" function will be terminated and must be re-started.*

Example:

Service interval display for Service OIL requires resetting:

– Press keys 1 and 0.

– Confirm entry with Q key.

Indicated on display: display shows current reading of Service OIL distance recorder (here e.g. 14 equates to a further 1400 km).

```
Channel 10      Adaption              14
                                <- 13 ->
```

– Press → key.

Indicated on display:

```
Channel 10      Adaption               1
Enter adaption value XXXXX
```

The distance recorder must be reset to 150 (equates to 15000 km) to reset the service interval display for Service OIL:

– Enter adaptation value 00150.

Indicated on the display after entering adaptation value 00150:

```
Channel 10    Adaption          150    Q
Act.val.oil in 100 km
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 10      Adaption         150   Q
Save changed value?
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 10      Adaption         150 ->
Changed value has been saved
```

– Press → key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– End output (function 06) ⇒ page 27 .

– Observe odometer display in dash panel insert.

– Switch off ignition.

When the ignition is switched off the service type shown in display goes out.

– Switch on ignition.

After switching on the ignition the service type must no longer be displayed in the odometer display in the dash panel.

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The service interval display is now reset.

4.6.4 Checking fuel gauge (adaption)

If the fuel gauge displays the contents of the fuel tank as being to high or too low the fuel gauge needle position in the dash panel insert can be corrected (adapted).

– Perform final control diagnosis for the dash panel insert ⇒ page 28 .

Check function of fuel gauge sender if final control diagnosis does not display a fault:

– Check the resistance values for the fuel gauge sender in the data block ⇒ page 32 .

If in read data block no short circuit or open circuit in the wiring or the fuel gauge sender is displayed, continue checks:

– Switch off ignition.

– Drain fuel tank completely, then fill with 6 litres of fuel. (V.A.G 1433A)

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 23 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0. (10 selects the function "Adaption").

Indicated on display:

```
Rapid data transfer                       Q
10 - Adaption
```

– Confirm entry with Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 3 and 0.

– Confirm entry with Q key.

Indicated on display:

```
Channel 30     Adaption       128      ->
                           <- 1     3 ->
```

Note

Entering a value greater than 136 will terminate the "Adaptation". In this case it will need to be restarted again with the function "10 - Adaptation".

– The adaptation value can be decreased down to 120 using the 1 key, and with the 3 key it can be increased up to 136, e.g. 132:

Indicated on display:

```
Channel 30     Adaption       132       Q
                           <- 1     3 ->
```

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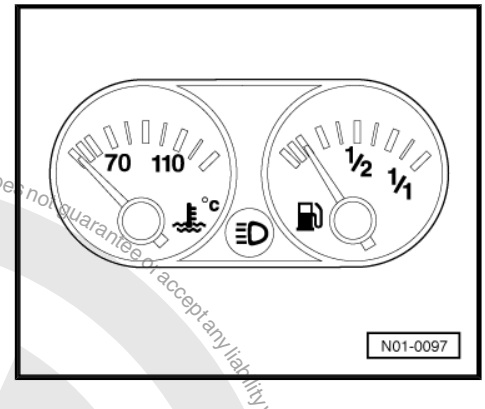

The fuel gauge is correctly adapted when the needle is positioned on the right-hand red graduation (reserve), as illustrated!

When needle position is OK:

– Confirm entry with Q key.

Indicated on display:

```
Channel 30       Adaption       xxx      Q
Save modified value?
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 30       Adaption       xxx     ->
Modified value is saved
```

– End the adaptation of the fuel gauge with the ↵ key.

Indicated on display:

```
Rapid data transfer                     Help
Enter address word  XX
```

Note

Renew fuel gauge sender only if fuel gauge cannot be adapted correctly.

– End output (function 06) ⇒ page 27 .

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5 Dash panel self-diagnosis for vehicles 10.99 ▸

General description:

Note

- *The dash panel insert must not be dismantled.*
- *If required the dash panel insert is to be exchanged using normal exchange part procedures. Complete damage report form and return together with dash panel insert. Use original packaging only when returning items.*
- *The odometer reading and the service interval display can be adapted to the new dash panel insert* *⇒ page 58* *.*

The dash panel insert is connected to the powertrain data bus in vehicles from 10.99 ▸.

The data bus is also called the CAN data bus.

Data can be exchanged between the powertrain data bus and the diagnosis wire (K-wire) via the data bus diagnostic interface - J533- in the dash panel insert.

Note

The data bus diagnostic interface -J533- in the new (replacement) dash panel insert must be re-coded in all cases, even if the correct code number has already been saved *⇒ page 66* *.*

The dash panel insert is controlled via a microprocessor which is equipped with an extensive self-diagnosis functionality.

If faults occur in the sensors and components being monitored, they will be stored in the fault memory together with an indication of the type of fault.

The self-diagnosis must be initiated at the start of fault finding and the stored information read. The fault information displayed is used in conjunction with a fault table which has information on the possible fault causes for pin-pointed repair measures ⇒ page 47 .

5.1 Performing self-diagnosis of dash panel insert

5.1.1 Initiating self-diagnosis of dash panel insert

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

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Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for “Rapid data transfer” mode.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word  XX
```

– Press keys 1 and 7. (“17” is used to enter the address word “Dash panel insert”).

Indicated on display:

```
Rapid data transfer                      Q
17 Dash panel insert
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                      Q
Tester sends address word 17
```

– Confirm entry with Q key.

Indicated on display:

```
6N0920804J Combi.instrument B00   X65 ->
Coding 00144                WSC     00000
```

– Press ↵ key.

If the following display appears:

```
Control unit not responding!          HELP
```

– Press the HELP key to print out a list of possible fault causes.

– After rectifying faults enter address word 17 for dash panel insert again and confirm with Q.

Indicated on display:

```
6N0920804J Combi.instrument B00   X65 ->
Coding 00144                WSC     00000
```

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– After the HELP key is pressed, a list of the possible functions is printed out ⇒ page 43 .

5.1.2 Overview of available functions

Functions	Page
01 - Reading control unit version	⇒ page 44
02 - Reading fault memory	⇒ page 45
03 - Final control diagnosis	⇒ page 50
05 - Erasing fault memory	⇒ page 46
06 - Ending output	⇒ page 46
07 - Coding control unit	⇒ page 52
08 - Reading data block	⇒ page 54
10 - Adaption	⇒ page 58

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Note

- *Do not select further functions which can be printed out after pressing the HELP key.*
- *After the function is finished the fault reader -V.A.G 1551- returns to the following starting position:*

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

5.1.3 Reading control unit version

Note

The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" ⇒ page 1 .

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                 HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS                 HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for "Rapid data transfer" mode.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word  XX
```

– Press keys 1 and 7. ("17" is used to enter the address word "Dash panel insert").

Indicated on display:

```
Rapid data transfer                       Q
17 Dash panel insert
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                       Q
Tester sends address word 17
```

Indicated on display (manufacturer 1):

```
6N0920804J Combi.instrument B00   X65 ->
Coding 00144                WSC     00000
```

- Top line: part number of control unit, system designation (combi-instrument), manufactures code version number
- Bottom line: Code number [10], dealership number [11]

Indicated on display (manufacturer 2):

```
6N0920804D    Combi.instrument TRWX22 ->
Coding 00144                WSC     00000
```

- Top line: part number of control unit, system designation (combi-instrument), manufactures code version number
- Bottom line: Code number [10], dealership number [11]

10) Depending on engine, gearbox, optional equipment and country version.

11) Will be automatically stored in the control unit when entering the system.

– Press → key.

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Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– End output (function 06) ⇒ page 46 .

5.1.4 Reading fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Note

The displayed fault information is only updated when the self-diagnosis is started or the function 05 "Erase fault memory" is selected. The information is not continuously updated.

– Switch on the printer with the PRINT key (indicator lamp in key lights up).

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 2. (02 selects the function "Read fault memory").

Indicated on display:

```
Rapid data transfer                Q
02 - Read fault memory
```

– Confirm entry with Q key.

The number of stored faults appears in the display.

```
X faults recognized!
```

The stored faults are displayed and printed out one after another.

– Check print out against fault table and rectify all faults as necessary ⇒ page 47 .

Note

If "No fault recognised" is displayed the programme will return to the start point after pressing → key.

```
No fault recognized!               ->
```

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

If something else is displayed: ⇒ Fault reader operating instructions .

– End output (function 06) ⇒ page 46 .

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5.1.5 Erasing fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Note

After erasing the fault memory its contents will be automatically displayed. If the fault memory cannot be erased, read the fault memory again and repair any faults found.

Prerequisites:

- Fault memory read ⇒ page 45 .
- All faults repaired.

After fault memory has been successfully read:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5. (05 selects the function "Erase fault memory").

Indicated on display:

```
Rapid data transfer                       Q
05 Erase fault memory
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory is erased!
```

The fault memory is now erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 46 .

Note

If the following appears in the display, the test sequence is faulty.

```
Warning!
Fault memory was not read
```

If the following appears in the display, the test sequence is faulty.

```
Rapid data transfer                      ->
Fault memory was not read
```

Adhere exactly to test sequence: first read fault memory, if necessary repair faults, then erase.

5.1.6 Ending output

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

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– Press keys 0 and 6. (06 selects the function “End output”).

Indicated on display:

```
Rapid data transfer                    Q
06 End output
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Help
Enter address word  XX
```

– Switch off ignition.

– Disconnect connector to fault reader -V.A.G 1551- .

5.2 Fault table

Note

- *The following table lists all the faults that can be recognised by the dash panel insert control unit -J285- . The faults are listed in order according to their 5-figure code numbers.*
- *Before renewing components, check the wiring and connections to these components as well as the earth connections, referring to the current flow diagram.*
- *When repair has been carried out, the fault memory must always be read again and erased.*

Indicated on display	Possible fault cause	Possible effects	Fault elimination
No fault recognized!	The self-diagnosis is finished If “No fault recognized” appears after completing repairs.		
00667[12] Ambient temperature signal. Open circuit/short to positive. Short to earth.	Open/short circuit. Ambient temperature sensor -G17- defective.	Dashes (- - -) are displayed in dash panel insert.	– Read data block ⇒ page 54 . – Fault finding referring to current flow diagram. – Renew ambient temperature sensor -G17- .
00771[13] Fuel gauge sender -G- . Open circuit/short to positive. Short to earth.	Open circuit or short circuit between fuel gauge sender -G- and dash panel insert. Fuel gauge sender -G- defective.	Fuel reserve display value 0 (“empty”).	– Read data block ⇒ page 54 . – Fault finding referring to current flow diagram. – Renew fuel gauge sender -G- .
00778 Steering angle sensor -G85- .			

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Indicated on display	Possible fault cause	Possible effects	Fault elimination
No communications.	Data received from steering angle sender -G85- via powertrain data bus not OK.	Function of systems connected to powertrain data bus not OK.	– Check coding of data bus diagnostic interface -J533- ⇒ page 66 . – Read out fault memory of ABS control unit and rectify any faults. – Check data bus to steering angle sender -G85- referring to current flow diagram.
00779[15)] Ambient temperature sensor -G17- . Open circuit/short to positive. Short to earth.	Open/short circuit. Ambient temperature sensor -G17- defective.	Dashes (- - -) are displayed in dash panel insert.	– Read data block ⇒ page 54 . – Fault finding referring to current flow diagram. – Renew ambient temperature sensor -G17- .
01039[14)] Coolant temperature display sender -G2- . Open circuit/short to positive. Short to earth.	Open circuit or short circuit between coolant temperature display sender -G2- and dash panel insert. Coolant temperature display sender -G2- defective.	Coolant temperature gauge needle is on left stop.	– Read data block ⇒ page 54 . – Fault finding referring to current flow diagram. – Renew coolant temperature display sender -G2- .
01044 Control unit incorrectly coded.	A control unit connected to the powertrain data bus is incorrectly coded. A control unit connected to the powertrain data bus is defective.	Poor driving characteristics (gear change jolt, load change jolt). No vehicle dynamics program.	– Read data block ⇒ page 54 . – Read fault memories of all control units connected to powertrain data bus and rectify any faults. – Check and if necessary correct control unit coding. – If necessary renew control unit.
01086 Speedometer sender -G22- . Signal too high.	Speedometer sender -G22- defective.	Incorrect speed displayed.	– Renew speedometer sender -G22- .
01312 Powertrain data bus.			

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Indicated on display	Possible fault cause	Possible effects	Fault elimination
Defective.	Fault in data wiring. Powertrain data bus in Bus off mode.	Poor driving characteristics (gear change jolt, load change jolt). No vehicle dynamics program.	– Read data block ⇒ page 54 . – Check control unit coding. – Read fault memories of all control units connected to powertrain data bus and rectify any faults. – Check wiring for data bus referring to current flow diagram.
01314 Engine control unit. No communications.	Data received from engine control unit via powertrain data bus not OK.	Poor driving characteristics (gear change jolt, load change jolt). No vehicle dynamics program.	– Read data block ⇒ page 54 . – Read fault memory of engine control unit and rectify any faults. – Check data bus to engine control unit referring to current flow diagram.
01315 Gearbox control unit. No communications.	Data received from gearbox control unit via powertrain data bus not OK.	Poor driving characteristics (gear change jolt, load change jolt). No vehicle dynamics program.	– Read data block ⇒ page 54 . – Read fault memory of gearbox control unit and rectify any faults. – Check data bus to gearbox control unit referring to current flow diagram.
01316 Brake control unit. No communications.	Data received from ABS control unit via powertrain data bus not OK.	Poor driving characteristics (gear change jolt, load change jolt). No vehicle dynamics program.	– Read data block ⇒ page 54 . – Read out fault memory of ABS control unit and rectify any faults. – Check data bus to ABS control unit referring to current flow diagram.
01320 Climatronic control unit -J255- . No communications.	Data received from Climatronic control unit -J255- via powertrain data bus not OK.	Function of systems connected to powertrain data bus not OK.	– Read data block ⇒ page 54 . – Check data bus to Climatronic control unit referring to current flow diagram.

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Indicated on display	Possible fault cause	Possible effects	Fault elimination
01321 Airbag control unit -J234- . No communications.	Data received from Climatronic control unit -J234- via powertrain data bus not OK.	Warning lamp for airbag is lit.	– Read data block ⇒ page 54 . – Read out fault memory of airbag control unit and rectify any faults. – Check data bus to airbag control unit referring to current flow diagram.
65535 Control unit. Defective.	Dash panel insert control unit -J285- defective.	No or faulty indication from instruments, displays and warning lamps.	– Renew dash panel insert.

12) Vehicles with Climatronic only: a fault entry is only stored when the fault has been registered continuously for at least 60 seconds.

13) A fault entry is only stored when the fault has been registered continuously for at least 20 seconds. During the first 20 seconds the text "Sender cannot currently be tested" will be displayed.

14) A fault entry “Open circuit/short to positive” is only registered once the engine has been running for 30 minutes and the fault is recognised.

15) Vehicles with ambient temperature sender only: a fault entry is only stored when the fault has been registered continuously for at least 60 seconds.

5.3 Final control diagnosis

The final control diagnosis is part of the electrical check. The following components can be checked via the final control diagnosis depending on equipment variants:

- Rev counter.
- Fuel gauge.
- Coolant temperature gauge.
- Speedometer.
- Displays (odometer, digital clock)
- Reserve fuel warning lamp -K105-
- Oil pressure warning lamp -K3-
- Coolant temperature/coolant shortage indicator warning lamp.
- Seat belt warning lamp, if fitted.
- Twin circuit brakes and handbrake system warning lamp -K7-
- Gong.
- Oil pressure warning buzzer.

– If the self-diagnosis detects a fault, install a new dash panel insert.

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Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* *.*
- *If the engine is running or the vehicle is moving the dash panel insert final control diagnosis cannot be initiated/will be interrupted.*
- *The* [C] *key can be used to exit the test sequence at any time.*

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys [0] and [3]. (03 selects the function "Final control diagnosis").

Indicated on display:

```
Rapid data transfer                      Q
03 - Final control diagnosis
```

– Confirm entry with [Q] key.

Indicated on display:

```
Final control diagnosis                 ->
Rev counter
```

The rev-counter needle moves forwards and backwards through the measuring range and then position itself at 3000.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                 ->
Fuel gauge
```

The fuel gauge needle moves forwards and backwards through measuring range and then positions itself at 1/2.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                 ->
Temperature gauge
```

The coolant temperature gauge needle moves forwards and backwards through measuring range and then positions itself at 90.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                 ->
Speedometer
```

The speedometer needle moves forwards and backwards through the measuring range and then positions itself at 100.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                 ->
Segment test
```

All LCD segments in speedometer display and in rev counter are activated and become visible.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                 ->
Fuel reserve warning lamp K105
```

The fuel reserve warning lamp -K105- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
Oil pressure warning lamp K3
```

The oil pressure warning lamp -K3- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
Hot lamp
```

The coolant temperature/coolant shortage display warning lamp lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
Brake system warning lamp K7
```

The dual circuit brake/handbrake warning lamp -K7- lights up.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
Gong
```

The gong (chime) will be activated and will sound continuously.

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
Buzzer/gong H3
```

The buzzer is activated. A warning signal can be heard (buzzer and gong -H3-).

– Press ⇨ key.

Indicated on display:

```
Final control diagnosis                    ->
END
```

After “END” appears in display, the actual values are displayed again.

– Press ⇨ key.

Indicated on display:

```
Rapid data transfer                      HELP
Select function XX
```

– End output (function 06) ⇒ page 46 .

5.4 Coding control unit

Using this function the dash panel insert can be coded as follows:

- Optional equipment
- National codes
- Number of cylinders
- Code for distance impulse number

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Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *The coding sets the various combination possibilities according to country variants, number of cylinders and engine type.*
- *The coding table shows only the various combination possibilities that apply to the VW Polo.*

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 7. (07 selects the function "Code control unit").

– Confirm entry with Q key.

Indicated on display:

```
Coding control unit
Enter code number XXXXX          (0-32000)
```

– Enter code number taken from code table ⇒ page 53 .

Example:

position				Code
02				Code for the optional equipment (seat belt warning)
	1			National codes (EU)
		4		Code for No. of cylinders (4 cylinder)
			1	Code for distance impulse number (1)

– Press keys 0, 2, 1, 4 and 1 .

Indicated on display:

```
Coding control unit                       Q
Enter code number 02141          (0-32000)
```

– Confirm entry with Q key.

Indicated on display:

```
6N0920804J Combi.instrument B00   X65 ->
Coding 02141                WSC    00000
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 46 .

5.4.1 Code table

Code	Settings
1. 3 4 5 position +2.	
	Code for the optional equipment [16)]
00	No optional equipment active
01	Brake pad wear indicator active
02	Seat belt warning active
04	Washer fluid warning active
	National codes

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1	Europe (EU)
2	USA (US)
3	Canada (CDN)
4	United Kingdom (GB)
5	Japan (JP)
6	Saudi Arabia (SA)
7	Australia (AUS)
	Code for No. of cylinders
1	Vehicles with no CAN connection
3	3-cylinder
4	4-cylinder
	Code for distance impulse number (K-number) 17)
1	3956
2	4017
3	4005
4	3862

16) If more than one item of optional equipment needs to be entered then the code numbers should be added together.

17) The code number for the distance impulse number is dependent on vehicle engine/gearbox combination:

Example:

Brake pad wear indicator and washer fluid warning:

01 + 04 = 05

Engine/gearbox combinations:	Code no.:
1.4 l / 55 kW - TDI - 3-cylinder	2
1.4 l / 74 kW - 4-cylinder, 1.6 l / 92 kW - 4-cylinder	4
all other engine/gearbox combinations	1

Note

The distance impulse number is a constant used to calculate the speed and distance travelled.

5.5 Reading data block

Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *Overview of selectable display groups* ⇒ page 55 .

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– Press keys 0 and 8 (08 initiates the function "Read data value block").

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Indicated on display:

```
Rapid data transfer                    Q
08 - Read data block
```

– Confirm entry with Q key.

Indicated on display:

```
Read data value block
Enter display group number XXX
```

Example for read data block 2:

Overview of selectable display groups ⇒ page 55 .

– Press keys 0, 0 and 2.

– Indicated on display:

```
Read data block 2                      ->
  820 km        8 l          113 Ω
```

Note

- *The display always shows the actual sender and sensor values. The values on the dash panel insert are filtered and therefore they can vary!*
- *To change to another display group proceed as follows:*

Display group	Fault reader - V.A.G 1551-	Fault reader - V.A.G 1552-
Higher	Press key 3	Press ↑ key
Lower	Press key 1	Press ↓ key
Skip	Press C key.	Press C key.

– Press C key to exit the current display group.

Indicated on display:

```
Read data block                        Help
Enter display group number XXX
```

– Now the desired display group number can be entered or press C key again to exit the function “Read data block”.

Indicated on display (after pressing C key again).

```
Rapid data transfer                    Help
Enter address word  XX
```

– End output (function 06) ⇒ page 46 .

5.5.1 Overview of selectable display group numbers

Display group	Display zone in display	Evaluation
001	1 = Speed in km/h 2 = Engine speed in rpm 3 = Oil pressure switch 2 <min 4 = Time	⇒ page 56
002	1 = Distance travelled counter in km 2 = Fuel gauge in l 3 = Ω value of fuel gauge sender -G- 4 = Ambient temperature sender in °C	⇒ page 56
003	1 = Coolant temperature in °C 2 = Vacant 3 = Vacant 4 = Vacant	⇒ page 57

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Display group	Display zone in display	Evaluation
050	1 = Odometer in km 2 = Engine speed in rpm 3 = Vacant 4 = Coolant temperature in °C	⇒ page 57
125[18)]	1 = Engine 2 = Automatic gearbox control unit 3 = ABS control unit 4 = Vacant	⇒ page 57
126[18)]	1 = Vacant 2 = Airbag control unit 3 = Vacant 4 = Vacant	⇒ page 58

18) The status of the data bus function of the control units connected to the powertrain data bus is displayed in the display groups 125 to 126. The display zones for absent control units remain empty.

5.5.2 Evaluating display group number 001

Display zone	Designation	Display contents	Fault elimination
1	Vehicle speed signal	Vehicle speed in km/h	– Visual check of wiring. – Check electrical connections of relevant circuit to ensure they are securely and correctly connected, and monitor display at the same time. – If the display contents do not change upon operation, rectify the fault or renew the relevant component. – Erase the fault memory. – Perform a function test. – Read the fault memory again.
2	Engine speed	Engine speed in rpm	
3	Oil pressure switch 0.9 bar	OilPress2<min. OilPress2 OK	
4	Time	Time in hours and minutes	

5.5.3 Evaluating display group number 002

Display zone	Designation	Display contents	Fault elimination
1	Distance travelled	Distance travelled in km	– Visual check of wiring. – Check electrical connections of relevant circuit to ensure they are securely and correctly connected, and monitor display at the same time. – If the display contents do not change upon operation, rectify the fault or renew the relevant component. – Perform a function test. – Read the fault memory again.
2	Fuel level [19)]	Fuel level in l	
3	Ω value from fuel gauge sender -G- [20)]	Resistance in Ω	
4	Ambient temperature	Ambient temperature in °C	

19) 0 l is indicated in zone 2 when fuel gauge sender -G- has an open/short circuit. If less than 7 litres of fuel are in the tank, “7 l” is always displayed; If more than 45 litres are in the tank, “45 ” is always displayed.

20) In display zone 3: 510 Ω is displayed for an open circuit and 0 Ω is displayed for a short circuit.

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5.5.4 Evaluating display group number 003

Display zone	Designation	Display contents	Fault elimination
1	Coolant temperature [21]	Coolant temperature in °C	– Visual check of wiring. – Check electrical connections of relevant circuit to ensure they are securely and correctly connected, and monitor display at the same time. – If the display contents do not change upon operation, rectify the fault or renew the relevant component. – Perform a function test. – Read the fault memory again.

21) If the actual coolant temperature is at a temperature of between approx. 75 °C and 107 °C then this will always be shown on the dash panel insert as 90 °C!

5.5.5 Evaluating display group number 050

Display zone	Designation	Display contents	Fault elimination
1	Distance travelled	Distance travelled in km	– Visual check of wiring. – Check electrical connections of relevant circuit to ensure they are securely and correctly connected, and monitor display at the same time. – If the display contents do not change upon operation, rectify the fault or renew the relevant component. – Erase the fault memory. – Perform a function test. – Read the fault memory again.
2	Engine speed	Engine speed in rpm	
4	Coolant temperature	Coolant temperature in °C	

5.5.6 Evaluating display group number 125

Display zone	Designation	Display contents	Fault elimination
1	Engine control unit.	Engine 1 = OK, data reception from engine control unit via powertrain data bus OK. Engine 0 = not OK, data reception from engine control unit via powertrain data bus not OK.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.
2	Automatic gearbox control unit	Gear. 1 = OK, data reception from automatic gearbox control unit via powertrain data bus OK. Gear. 0 = not OK, no data reception from automatic gearbox control unit via powertrain data bus.	
3	ABS control unit	ABS 1 = OK, data reception from ABS control unit via powertrain data bus OK. ABS 0 = not OK, data reception from ABS control unit via powertrain data bus not OK.	

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5.5.7 Evaluating display group number 126

Display zone	Designation	Display contents	Fault elimination
2	Airbag control unit	Airbag 1 = OK, data reception from airbag control unit via powertrain data bus OK Airbag 0 = not OK, no data reception from airbag control unit via powertrain data bus.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.

5.6 Adaption

Using the Adaptation function the following changes can be made and stored:

- Adaptation of the fuel gauge
- Resetting the service interval display (SID)
- Adaptation of the service interval display (SID)
- Adaptation of the distance recorder when renewing the dash panel insert
- Correcting the consumption indicator

The individual functions are called up using the relevant adaptation channel number (see adaptation table).

Adaptation table:

Adaptation channel	Adaptation functions
09	Adapting distance recorder ⇒ page 34 .
10	Service interval data for oil changes service (Service OIL) - counter for distance recorder ⇒ page 36
	Service interval data for oil changes service (Service OIL) - resetting counter for distance recorder ⇒ page 38 .
11	Service interval data for inspection (Service INSP) - counter distance recorder in km ⇒ page 36
	Service interval data for inspection (Service INSP) - resetting counter for distance recorder ⇒ page 38 .
12	Service interval data for (Service INSP) - counter for time in days ⇒ page 36
	Service interval data for (Service INSP) - resetting time counter in days ⇒ page 38 .
30	Adapting (matching) fuel gauge ⇒ page 59 .

5.6.1 Adapting distance travelled display

The adaption of “distance display” for vehicles 10.99 ‣ is similar to the adaption of vehicles 1998 ‣ 09.99 ⇒ page 34 .

5.6.2 Adaptation of service interval data when renewing the dash panel insert

The adaption of “service interval data when replacing the dash panel insert” for vehicles 10.99 ‣ is similar to the adaption of vehicles 1998 ‣ 09.99 ⇒ page 36 .

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5.6.3 Resetting service interval display

The adaption for “resetting service interval display” for vehicles 10.99 ‣ is similar to the adaption of vehicles 1998 ‣ 09.99 ⇒ page 38 .

5.6.4 Checking fuel gauge (adaption)

If the fuel gauge displays the contents of the fuel tank as being to high or too low the fuel gauge needle position in the dash panel insert can be corrected (adapted).

– Perform final control diagnosis for dash panel insert Page ⇒ page 50

Check function of fuel gauge sender if final control diagnosis does not display a fault:

– Check resistance value of fuel gauge sender in measured value block. Reading data block ⇒ page 54 .

If in read data block no short circuit or open circuit in the wiring or the fuel gauge sender is displayed, continue checks:

– Switch off ignition.

– Drain fuel tank completely, then fill with 7 litres of fuel. (V.A.G 1433A)

– Initiate self-diagnosis of dash panel insert ⇒ page 42 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 1 and 0. (10 selects the function “Adaption”).

Indicated on display:

```
Rapid data transfer                       Q
10 - Adaption
```

– Confirm entry with Q key.

Indicated on display:

```
Adaption
Enter channel number XX
```

– Press keys 3 and 0.

– Confirm entry with Q key.

Indicated on display:

```
Channel 30      Adaption       128     ->
                       <- 1          3 ->
```

Note

Entering a value greater than 136 will terminate the “Adaptation”. In this case it will need to be restarted again with the function “10 - Adaptation”.

– The adaptation value can be decreased down to 120 using the 1 key, and with the 3 key it can be increased up to 136, e.g. 132:

Indicated on display:

```
Channel 30      Adaption       132       Q
                       <- 1          3 ->
```

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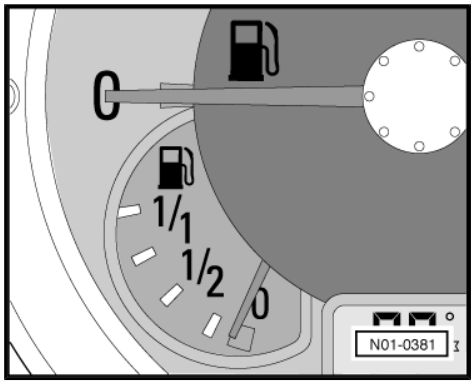
The fuel gauge is adapted correctly when the needle is to the left of the red reserve marking as illustrated!



When needle position is OK:

– Confirm entry with Q key.

Indicated on display:

```
Channel 30        Adaption       xxx      Q
Save modified value?
```

– Confirm entry with Q key.

Indicated on display:

```
Channel 30        Adaption       xxx     ->
Modified value is saved
```

– End the adaptation of the fuel gauge with the → key.

Indicated on display:

```
Rapid data transfer                     Help
Enter address word  XX
```

Note

Renew fuel gauge sender only if fuel gauge cannot be adapted correctly.

– End output (function 06) ⇒ page 46 .

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6 Data bus diagnostic interface

General description:

The dash panel insert is connected to the powertrain data bus in vehicles from 10.99 ▸.

The data bus is also called the CAN data bus.

Data can be exchanged between the powertrain data bus and the diagnosis wire (K-wire) via the data bus diagnostic interface -J533- in the dash panel insert.

The data bus diagnostic interface -J533- must be coded according to the vehicle equipment levels if the dash panel insert is renewed.

Note

The data bus diagnostic interface -J533- in the new (replacement) dash panel insert must be re-coded in all cases, even if the correct code number has already been saved.

The data bus diagnostic interface -J533- in the dash panel insert has its own diagnostic address.

The self-diagnosis must be initiated at the start of fault finding and the stored information read. The fault information displayed is used in conjunction with a fault table which has information on the possible fault causes for pin-pointed repair measures.

6.1 Performing self-diagnosis of data bus diagnostic interface -J533-

6.1.1 Initiating self-diagnosis of data bus diagnostic interface -J533-

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for "Rapid data transfer" mode.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word  XX
```

– Press keys 1 and 9. ("19" is used to enter the address word "Gateway").

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Indicated on display:

```
Rapid data transfer                    Q
19 Gateway
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Q
Tester sends address word 19
```

Indicated on display:

```
6N0909901  Gateway K  <-> CAN       0001
Coding XXXXX                 WSC   00000
```

– Press → key.

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

– After the HELP key is pressed, a list of the possible functions is printed out ⇒ page 62 .

6.1.2 Overview of available functions

Functions	Page
01 - Read control unit version	⇒ page 62
02 - Read fault memory	⇒ page 63
05 - Erase fault memory	⇒ page 64
06 - End output	⇒ page 65
07 - Code control unit	⇒ page 66
08 - Read data block	⇒ page 67

Note

- *Do not select further functions which can be printed out after pressing the HELP key.*
- *After the function is finished the fault reader -V.A.G 1551- returns to the following starting position:*

Indicated on display:

```
Rapid data transfer                 HELP
Select function XX
```

6.1.3 Reading control unit version

Note

The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS              HELP
  1 - Rapid data transfer*
```

```
V.A.G - SELF-DIAGNOSIS              HELP
  2 - Flash code output*
```

22) Appears alternately

– Press key 1 for "Rapid data transfer" mode.

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Indicated on display:

```
Rapid data transfer                    HELP
Enter address word  XX
```

– Press keys 1 and 9. (“19” is used to enter the address word “Gateway”).

Indicated on display:

```
Rapid data transfer                       Q
19 Gateway
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                       Q
Tester sends address word 19
```

Indicated on display:

```
6N0909901  Gateway K  <-> CAN        0001
Coding XXXXX                   WSC  00000
```

- Top line: ID no. of control unit, System designation (Gateway K <-> CAN)[24], Version number
- Bottom line: Code number [23], Dealership number

23) Depends on control units connected to the powertrain data bus

24) The data bus diagnostic interface -J533- in the dash panel is referred to as “Gateway” in the self-diagnosis.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 65 .

6.1.4 Reading fault memory

Note

The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the “vehicle diagnosis, testing and information system may also be used” *⇒ page 1* *.*

– Initiating self-diagnosis of data bus diagnostic interface -J533- ⇒ page 61 .

Note

The displayed fault information is only updated when the self-diagnosis is started or the function 05 “Erase fault memory” is selected. The information is not continuously updated.

– Switch on the printer with the PRINT key (indicator lamp in key lights up).

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 2. (02 selects the function “Read fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
02 - Read fault memory
```

– Confirm entry with Q key.

The number of stored faults appears in the display.

```
X faults recognized!
```

The stored faults are displayed and printed out one after another.

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– Check print out against fault table and rectify all faults as necessary ⇒ page 65 .

Note

If "No fault recognised" is displayed the programme will return to the start point after pressing → key.

```
No fault recognized!                    ->
```

Indicated on display:

```
Rapid data transfer                     HELP
Select function XX
```

If something else is displayed: ⇒ Fault reader operating instructions .

– End output (function 06) ⇒ page 65 .

6.1.5 Erasing fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* .

– Initiating self-diagnosis of data bus diagnostic interface -J533- ⇒ page 61 .

Note

After erasing the fault memory its contents will be automatically displayed. If the fault memory cannot be erased, read the fault memory again and repair any faults found.

Prerequisites:

- Fault memory read ⇒ page 63 .
- All faults repaired.

After fault memory has been successfully read:

Indicated on display:

```
Rapid data transfer                     HELP
Select function XX
```

– Press keys 0 and 5. (05 selects the function "Erase fault memory").

Indicated on display:

```
Rapid data transfer                     Q
05 Erase fault memory
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                     ->
Fault memory is erased!
```

The fault memory is now erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                     HELP
Select function XX
```

– End output (function 06) ⇒ page 65 .

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Note

If this appears in the display, the test sequence is faulty.

```
Warning!
Fault memory was not read
```

If this appears in the display, the test sequence is faulty.

```
Rapid data transfer                    ->
Fault memory was not read
```

Adhere exactly to test sequence: first read fault memory, if necessary repair faults, then erase.

6.1.6 Ending output

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6. (06 selects the function “End output”).

Indicated on display:

```
Rapid data transfer                       Q
06 - End output
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Help
Enter address word  XX
```

– Switch off ignition.

– Disconnect connector to fault reader -V.A.G 1551- .

6.2 Fault table

Note

- *The following table lists all the faults that can be recognised by the data bus diagnostic interface -J533- . The faults are listed in order according to their 5-figure code numbers.*
- *Before renewing components, check the wiring and connections to these components as well as the earth connections, referring to the current flow diagram.*
- *When repair has been carried out, the fault memory must always be read again and erased.*

Indicated on display	Possible fault cause	Possible effects	Fault elimination
No fault recognized!	The self-diagnosis is finished If “No fault recognized” appears after completing repairs.		
01044 Control unit incorrectly coded.			

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Indicated on display	Possible fault cause	Possible effects	Fault elimination
	– A control unit connected to the powertrain data bus has been incorrectly coded. – A control unit connected to the powertrain data bus is defective.	Poor driving characteristics (gear change jolt, load change jolt) No ESP (Electronic Stabilisation Programme).	– Read data block ⇒ page 67 . – Read fault memories of all control units connected to powertrain data bus and rectify any faults. – Check and if necessary correct control unit coding. – If necessary renew control unit.

6.3 Coding data bus diagnostic interface - J533-

Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *The data bus diagnostic interface -J533- must be coded according to the vehicle equipment levels if the dash panel insert is renewed.*
- *The data bus diagnostic interface -J533- in the new (replacement) dash panel insert must be re-coded in all cases, even if the correct code number has already been saved.*

– Initiating self-diagnosis of data bus diagnostic interface -J533- ⇒ page 61 .

Indicated on display:

```
Rapid data transfer                    Help
Enter address word  XX
```

– Press keys 0 and 7. (07 selects the function "Code control unit").

Indicated on display:

```
Rapid data transfer                       Q
07 - Coding control unit
```

– Confirm entry with Q key.

Indicated on display:

```
Coding control unit
Enter code number XXXXX          (0-32000)
```

– Enter code number compiled from following code table.

Control units on powertrain data bus	Code no.:
Automatic gearbox	00001
Anti-lock brake system (ABS)	00002
Combi-instrument	00004
Steering angle sensor	00008
Airbag	00016
Air conditioning system	00032

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Power assisted steering	00064

The code numbers of the control units connected to the power-train data bus must be added together.

Note

The combi-instrument "00004" must always be coded.

Example:

Airbag + combi-instrument + ABS:

00016 + 00004 + 00002 = 00022

Indicated on display (example):

```
6N0909901  Gateway K  <-> CAN       0001
Coding 00022                 WSC   00000
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                HELP
Select function XX
```

– End output (function 06) ⇒ page 65 .

6.4 Reading data block

Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* .
- *Display group 125* *⇒ page 68* *and display group 126* *⇒ page 69* *can be displayed.*

– Initiating self-diagnosis of data bus diagnostic interface -J533- ⇒ page 61 .

Indicated on display:

```
Rapid data transfer                Help
Enter address word  XX
```

– Press keys 0 and 8 (08 initiates the function "Read data value block").

Indicated on display:

```
Rapid data transfer                  Q
08 - Read data block
```

– Confirm entry with Q key.

Indicated on display:

```
Read data block                    Help
Enter display group number XXX
```

The display group number 001 is an example, to illustrate the sequence.

– Press the keys 0, 0 and 1 for "Display group number 1" and then click on the Q key to confirm the entry.

Indicated on display: (1...4 = display zones)

```
Reading data block 1                 ->
         1         2         3         4
```

Note

To change to another display group proceed as follows:

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Display group	Fault reader - V.A.G 1551-	Fault reader - V.A.G 1552-
Higher	Press key 3	Press ↑ key
Lower	Press key 1	Press ↓ key
Skip	Press C key.	Press C key.

– Press C key to exit the current display group.

Indicated on display:

```
Read data block                    Help
Enter display group number XXX
```

– Now the desired display group number can be entered or press C key again to exit the function “Read data block”.

Indicated on display (after pressing C key again).

```
Rapid data transfer                Help
Enter address word  XX
```

– End output (function 06) ⇒ page 65 .

6.4.1 Display group 125

Note

- *The display always shows the actual sender and sensor values. The values on the dash panel insert are filtered and therefore they can vary!*
- *The following data blocks show the condition displays for all the control units connected to the powertrain data bus.*
- *The display zones for absent control units remain empty.*

Structure of display contents for display group number 125

Display group 125						
Read data block 125 →				▾ Indicated on display		
xxx	xx	xx	xx	▾ Display zones	Target value	Evaluation
1	2	3	4	empty[25]	empty[25]	
			ABS control unit		ABS 1	⇒ page 69
		Automatic gearbox control unit			Gear. 1	⇒ page 69
	Engine				Engine 1	⇒ page 68

25) here, “empty” means that there is nothing in the display zone

Evaluating display group number 125

Display zone	Designation	Display contents	Fault elimination
1	Engine control unit.	Engine 1 = OK, data reception from engine control unit via powertrain data bus OK. Engine 0 = not OK, data reception from engine control unit via powertrain data bus not OK.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.

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Display zone	Designation	Display contents	Fault elimination
2	Automatic gearbox control unit.	Gear. 1 = OK, data reception from automatic gearbox control unit via powertrain data bus OK. Gear. 0 = not OK, no data reception from automatic gearbox control unit via powertrain data bus.	
3	ABS control unit.	ABS 1 = OK, data reception from ABS control unit via powertrain data bus OK ABS 0 = not OK, no data reception from ABS control unit via powertrain data bus.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.

6.4.2 Display group 126

Note

- *The display always shows the actual sender and sensor values. The values on the dash panel insert are filtered and therefore they can vary!*
- *The following data blocks show the condition displays for all the control units connected to the powertrain data bus.*
- *The display zones for absent control units remain empty.*

Structure of display contents for display group number 126

Display group 126						
Read data block 126 xx xxx xxx xx x				→ ▾ Indicated on display		
1	2	3	4	▾ Display zones	Target value	Evaluation
				Steering	Steering 1	⇒ page 70
				Air conditioner control unit	Air. Cond.1	⇒ page 70
				Airbag control unit	Airbag 1	⇒ page 70
				Steering angle sensor	St. ang. 1	⇒ page 69

Evaluating display group number 126

Display zone	Designation	Display contents	Fault elimination
1	Steering angle sensor.	St. ang.1 = OK, data reception from steering angle sender via powertrain data bus OK St. ang. 0 = not OK, no data reception from steering angle sender via powertrain data bus.	If data reception is not OK: – check data bus to steering angle sender referring to current flow diagram.

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Display zone	Designation	Display contents	Fault elimination
2	Airbag control unit.	Airbag 1 = OK, data reception from airbag control unit via powertrain data bus OK. Airbag 0 = not OK, no data reception from airbag control unit via powertrain data bus.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.
3	Air conditioner control unit.	Air Cond.1 = OK, data reception from air conditioning system control unit via powertrain data bus OK Air Cond.0 = not OK, no data reception from air conditioning system control unit via powertrain data bus.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.
4	Steering.	Steering 1 = OK, data reception from steering control unit via powertrain data bus OK Steering 0 = not OK, no data reception from Steering control unit via powertrain data bus.	If data reception is not OK: – check data bus to control unit referring to current flow diagram.

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7 Self-diagnosis of automatic headlight range control

General description:

To prevent dazzling oncoming traffic, vehicles with gas discharge lights must be equipped with headlight range control.

The headlight range control (HRC) maintains the inclination angle of the dipped beam constant, even when the inclination of the vehicle changes due to the vehicle loading.

There is an automatic headlight range control installed in Polo vehicles which comprises of the following components.

- The left gas discharge light control unit -J343- , the right gas discharge light control unit -J344- and the control unit for headlight range control -J431- .
- The rear left vehicle level sender -G76- .
- The left headlight range control motor -V48- and the right headlight range control motor -V49- .

The vehicle level sender is located on the rear axle on the left-hand side of the vehicle ⇒ Running gear , front and four-wheel drive; Rep. Gr. 42 ; Vehicle level sender in vehicles with automatic headlight range control .

Therefore, the “basic setting” sequence must be carried out to adjust the headlights ⇒ Maintenance ; Booklet 28 .

If an electrical fault occurs in the automatic headlight range control whilst driving, the headlights will remain in this position. When the ignition is switched on again the control motors will move the headlight beams to the lowest position. This will alert the driver that there is a fault.

The self-diagnosis must be initiated at the start of fault finding and the stored information read. The fault information displayed is used in conjunction with a fault table which has information on the possible fault causes for pin-pointed repair measures.

7.1 Performing self-diagnosis of automatic headlight range control

7.1.1 Initiating self-diagnosis of automatic headlight range control

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the “vehicle diagnosis, testing and information system may also be used” ⇒ page 1 .

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

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– Press key 1 for “Rapid data transfer” mode.

Indicated on display:

```
Rapid data transfer                    HELP
Enter address word  XX
```

– Press key 5 twice. (Entering “55” selects the address word for “Headlight range control”).

Indicated on display:

```
Rapid data transfer                     Q
55 Headlight range control
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                     Q
Tester sends address word 55
```

Indicated on display:

```
6N0907357 Headlight range contr. 0001 ->
Coding 00002                     WSC XXXXX
```

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– After the HELP key is pressed, a list of the possible functions is printed out ⇒ page 72 .

7.1.2 Overview of available functions

Functions	Page
01 - Read control unit version	⇒ page 72
02 - Read fault memory	⇒ page 73
03 - Final control diagnosis	⇒ page 77
04 - Initiate basic setting	⇒ page 79
05 - Erase fault memory	⇒ page 74
06 - End output	⇒ page 75
07 - Code control unit	⇒ page 79
08 - Read data block	⇒ page 78

Note

- *Do not select further functions which can be printed out after pressing the HELP key.*
- *After the function is finished the fault reader -V.A.G 1551- returns to the following starting position:*

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

7.1.3 Reading control unit version

Note

The following sequence is described for the fault reader -V.A.G 1551- , the sequence described in the chapter for the “vehicle diagnosis, testing and information system may also be used” *⇒ page 1* *.*

– Connecting fault reader ⇒ page 1 .

– Switch on ignition.

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Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  1 - Rapid data transfer*
```

Indicated on display:

```
V.A.G - SELF-DIAGNOSIS                HELP
  2 - Flash code output*
```

*) Appears alternately

– Press key 1 for “Rapid data transfer” mode.

Indicated on display:

```
Rapid data transfer                   HELP
Enter address word XX
```

– Press key 5 twice. (Entering “55” selects the address word for “Headlight range control”).

Indicated on display:

```
Rapid data transfer                      Q
55 Headlight range control
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                      Q
Tester sends address word 55
```

Indicated on display:

```
6N0907357 Headlight range contr. 0001 ->
Coding 00002                     WSC XXXXX
```

- Top line: Part No. of control unit[26] System designation (Headlight range control), Version number[26]
- Lower line: Code number

26) The part number and version number can deviate from the number indicated here on the display, e.g. due to part number amendment.

– Press ↵ key.

If the following display appears:

```
Control unit not responding!          HELP
```

– Press the HELP key to print out a list of possible fault causes.

– After rectifying faults, enter address word 55 for headlight range control again and confirm with Q key.

Indicated on display:

```
6N0907357 Headlight range contr. 0001 ->
Coding 00002                     WSC XXXXX
```

– Press ↵ key.

Indicated on display:

```
Rapid data transfer                   HELP
Select function XX
```

– End output (function 06) ⇒ page 75 .

7.1.4 Reading fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the “vehicle diagnosis, testing and information system may also be used” *⇒ page 1* *.*

– Initiate self-diagnosis of automatic range control ⇒ page 71 .

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Note

The displayed fault information is only updated when the self-diagnosis is started or the function 05 “Erase fault memory” is selected. The information is not continuously updated.

– Switch on the printer with the PRINT key (indicator lamp in key lights up).

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 2. (02 selects the function “Read fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
02 - Read fault memory
```

– Confirm entry with Q key.

The number of stored faults appears in the display:

```
X faults recognized!
```

The stored faults are displayed and printed out one after another.

– Check print out against fault table and rectify all faults as necessary ⇒ page 76 .

Note

If “No fault recognised” is displayed the programme will return to the start point after pressing → key.

```
No fault recognized!                    ->
```

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

If something else is displayed: ⇒ Fault reader operating instructions .

– End output (function 06) ⇒ page 75 .

7.1.5 Erasing fault memory

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the “vehicle diagnosis, testing and information system may also be used” *⇒ page 1* *.*

– Initiate self-diagnosis of automatic range control ⇒ page 71 .

Note

After erasing the fault memory its contents will be automatically displayed. If the fault memory cannot be erased, read the fault memory again and repair any faults found.

Prerequisites:

- Fault memory read ⇒ page 73 .
- All faults repaired.

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After fault memory has been successfully read:

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 5. (05 selects the function “Erase fault memory”).

Indicated on display:

```
Rapid data transfer                       Q
05 Erase fault memory
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                      ->
Fault memory is erased!
```

The fault memory is now erased.

– Press → key.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 75 .

Note

If this appears in the display, the test sequence is faulty:

```
Warning!
Fault memory was not read
```

If this appears in the display, the test sequence is faulty:

```
Rapid data transfer                      ->
Fault memory was not read
```

Adhere exactly to test sequence: first read fault memory, if necessary repair faults, then erase.

7.1.6 Ending output

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 6. (06 selects the function “End output”).

Indicated on display:

```
Rapid data transfer                       Q
06 End output
```

– Confirm entry with Q key.

Indicated on display:

```
Rapid data transfer                    Help
Enter address word  XX
```

– Switch off ignition.

– Disconnect fault reader -V.A.G 1551- .

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7.2 Fault table

Note

- *All 'static' and 'sporadic' faults are stored in the fault memory. A fault is recognized as 'static' if it is present for a minimum of 2 seconds. If a fault is then no longer present it is stored as a 'sporadic' fault. The annotation "/SP" appears in the display.*
- *After switching on the ignition, any faults stored are initially set to 'sporadic' and are then changed to 'static' if they are still present after the check has been completed.*
- *Sporadic faults which no longer occur after 50 driving cycles (ignition on for at least 5 minutes, road speed of more than 30 km/h) are erased automatically.*
- *The following table lists all the faults that can be recognised by the control unit for headlight range control -J431- . The faults are listed in order according to their 5-figure code numbers.*
- *Before renewing components, check the wiring and connections to these components as well as the earth connections, referring to the current flow diagram.*
- *When repair has been carried out, the fault memory must always be read again and erased.*

Indicated on display	Possible fault cause	Possible effects	Fault elimination
No fault recognized!	The self-diagnosis is finished If "No fault recognized" appears after completing repairs.		
00625 Speed signal. Implausible signal.	– Wiring open or short circuit between speedometer sender and connection in dash panel wiring harness. – Speedometer sender -G22- defective.	– Automatic headlight range control not functioning.	– Perform fault finding with dash panel insert self-diagnosis. – Fault finding referring to current flow diagram. – Renew speedometer sender -G22- .
00774 Rear left vehicle level sender -G76- . Open circuit/ short to positive. Short to earth.	– Open circuit or short circuit between rear left vehicle level sender -G76- and control unit for headlight range control. – Rear left vehicle level sender -G76- defective. – Coupling rods bent or damaged. – Vehicle level sender loose.	– Automatic headlight range control not functioning.	– Continue fault finding with read data block. – Fault finding referring to current flow diagram. – Renew rear left vehicle level sender -G76- . – Repair coupling rods, replace if necessary. – Check security of rear left vehicle level sender -G76- .
01042			

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Indicated on display	Possible fault cause	Possible effects	Fault elimination
Control unit not coded.	– The control unit is not coded or is incorrectly coded.	– Control motors block in current position.	– Read data block ⇒ page 78 .
01538 Control motors for headlight range control - V48/49. Short circuit to positive. Short to earth.	– Wiring open or short circuit between left headlight range control motor -V48- , right headlight range control motor -V49- and control unit for headlight range control.	– Automatic headlight range control not functioning.	– Continue fault finding with final control diagnosis. – Fault finding referring to current flow diagram.
01539 Headlights have not been adjusted.	– Headlights are in adjustment position.	– Automatic headlight range control not functioning.	– Adjust headlights, continue with basic setting.
65535 Control unit defective.		– Automatic headlight range control not functioning.	– Replace control unit for automatic headlight range control.

7.3 Final control diagnosis

The control motors of the automatic headlight range control can be checked with the final control diagnosis.

Note

- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* ⇒ page 1 .
- *If the engine is running or the vehicle is moving the headlight range control final control diagnosis cannot be initiated/will be terminated.*
- *The* C *key can be used to exit the test sequence at any time.*

– Initiate self-diagnosis of automatic range control ⇒ page 71 .

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– Press keys 0 and 3. (03 selects the function "Final control diagnosis").

Indicated on display:

```
Rapid data transfer                       Q
03 - Final control diagnosis
```

– Confirm entry with Q key.

Indicated on display:

```
Final control diagnosis                  ->
Headlights are lowered
```

The headlights will now be lowered until the lower end position is attained.

– Press ↵ key.

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Indicated on display:

```
Final control diagnosis                    ->
Headlights are raised
```

The headlights will now be raised until the upper end position is attained.

– Press [→] key.

Indicated on display:

```
Final control diagnosis                    ->
END
```

– Press [→] key.

Indicated on display:

```
Final control diagnosis terminated         ->
```

– Press [→] key.

Indicated on display:

```
Rapid data transfer                      HELP
Select function XX
```

– End output (function 06) ⇒ page 75 .

7.4 Reading data block

Note

The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used" *⇒ page 1* *.*

– Initiate self-diagnosis of automatic range control ⇒ page 71 .

Indicated on display:

```
Rapid data transfer                      HELP
Select function XX
```

– Press keys [0] and [8] (08 initiates the function "Read data value block").

Indicated on display:

```
Rapid data transfer                         Q
08 - Read data block
```

– Confirm entry with [Q] key.

Indicated on display:

```
Read data block
Enter display group number XXX
```

– Select relevant display group number and confirm entry with [Q] key.

Overview of selectable display group numbers:

Display group	Display zone in display
001	1 = Voltage supply in V 2 = Dipped beam voltage via terminal 56b in V 3 = Voltage at front level sender 4 = Voltage at control motors
002	1 = Angle of front level sender 2 = Angle of rear level sender 3 = Angle of tilt 4 = Speed in km/h

Example of a data block 001:

– Press key [0] twice and key [1] once.

Indicated on display:

```
Read data block 1                           ->
   12V      1.9V       0.0V          9.8V
```

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0.0 V must always be displayed in display zone 3 as the Polo does not have a level sender.

Example of a data block 002:

– Press key 0 twice and key 2 once.

Indicated on display:

```
Read data block 2                    ->
0.0< °     16.8< °       -8       30 km/h
```

Note

- *"0.0 < 0" must always be displayed in display zone 1 as the Polo does not have a front level sender.*
- *The display always shows the actual sender and voltage values.*

– Press C key to exit the current display group.

Indicated on display:

```
Read data block                      Help
Enter display group number XXX
```

– Now the desired display group number can be entered or press C key again to exit the function "Read data block".

Indicated on display (after pressing C key again):

```
Rapid data transfer                  Help
Enter address word  XX
```

– End output (function 06) ⇒ page 75 .

7.5 Basic setting

Therefore, the "basic setting" sequence must be carried out to adjust the headlights ⇒ Maintenance ; Booklet 28 .

7.6 Coding control unit

Note

- *The headlight range control unit must be coded for the relevant drive system.*
- *The following sequence is described for the fault reader - V.A.G 1551- , the sequence described in the chapter for the "vehicle diagnosis, testing and information system may also be used"* *⇒ page 1* *.*

– Initiate self-diagnosis of automatic range control ⇒ page 71 .

Indicated on display:

```
Rapid data transfer                  HELP
Select function XX
```

– Press keys 0 and 7.

– Confirm entry with Q key.

Indicated on display:

```
Coding control unit
Enter code number XXXXX        (0-32000)
```

The following coding is possible for the Polo:

- 00002 for all vehicles.

Indicated on display:

```
Coding control unit                     Q
Enter code number 00002
```

– Confirm entry with Q key.

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Indicated on display after approx. 5 seconds:

```
6N0907357 Headlight range contr. 0001 ->
Coding 00002
```

– Press ⏎ key to end coding procedure.

Indicated on display:

```
Rapid data transfer                    HELP
Select function XX
```

– End output (function 06) ⇒ page 75 .

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